Document of
The World Bank

Report No: 19226

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN OF US$16 MILLION

AND A

PROPOSED CREDIT OF SDR22.2 MILLION (USD$ 30 MILLION EQUIVALENT)

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR A

FOURTH RURAL WATER SUPPLY AND SANITATION PROJECT

May 10, 1999

Urban Development Sector Unit
East Asia and Pacific Regional Office

CURRENCY EQUIVALENTS

(Exchange Rate Effective April 1998)

Currency Unit = Renminbi
$1.00 = Y8.3
Y1.0 = $0.12

FISCAL YEAR

January 1- December 31

WEIGHTS AND MEASURES

m	=	Meter (= 3.28 feet)
km	=	Kilometer (= 0.62 miles)
l	=	Liter (=0.264 US gallons)
lcd	=	Liters per capita per day
m^3	=	Cubic meter or ton of water (284 US gallons)

ABBREVIATIONS AND ACRONYMS

AWP	- Annual Work Plan
CAS	- Country Assistance Strategy
CNCCCITC	- China National Chemical Construction Company International Tendering Company
CPO	- County Project Office
ERR	- Economic Rate of Return
FRR	- Financial Rate of Return
ICB	- International Competitive Bidding
MOF	- Ministry of Finance
NCB	- National Competitive Bidding
NPO	- National Project Office
NPHCC	- National Patriotic Health Campaign Committee
NPV	- Net Present Value
NRWS	- National Rural Water Supply Project (Cr. N0270-CHA)
OED	- Operations Evaluation Department
PHRD	- Policy and Human Resources Development Fund
PIP	- Project Implementation Plan
PMO	- Project Management Office
PPO	- Provincial Project Office
QCBS	- Quality-and Cost-Based Selection
RAP	- Resettlement Action Plan
RWS	Rural Water Supply Project (Cr. 1578–CHA)
RWSS	- Rural Water Supply and Sanitation Project (Cr. 2336-CHA)
SOEs	- (1)Statements of Expenditures (2) State Owned Enterprises
SDPC	- State Development Planning Commission
UNDP	- United Nations Development Program
UNICEF	- United Nations Children's Fund
VAT	- Value Added Tax
WAs	- Withdrawal Applications
WSP	- UNDP/World Bank Water and Sanitation Program
WTP	- Willingness to Pay

Vice President: Jean-Michel Severino, EAP
Country Director: Yukon Huang, EACCF
Sector Manager: Keshav Varma, EASUR
Task Team Leader: George Plant, EACCF

CHINA
FOURTH RURAL WATER SUPPLY AND SANITATION PROJECT

CONTENTS

Annexes

CHINA

Fourth Rural Water Supply and Sanitation Project

Project Appraisal Document

East Asia and Pacific Region
Country Operations Division

Date: April 16, 1999	**Team Leader:** George N. Plant
Country Manager/Director: Yukon Huang	**Sector Manager/Director:** Keshav Varma
Project ID: 57352	**Sector(s):** WR - Rural Water Supply & Sanitation
Lending Instrument: Specific Investment Loan (SIL)	**Theme(s):**
	Poverty Targeted Intervention: Yes

Project Financing Data

☒ Loan ☒ Credit ☐ Grant ☐ Guarantee ☐ Other (Specify)

For Loans/Credits/Others:

Amount (US$m) 46 (IBRD Loan: 16, IDA Credit: 30)

Proposed Terms: ☐ To be defined ☐ Multicurrency ☒ Single currency U.S. dollars
☒ Standard Variable ☐ Fixed ☒ LIBOR-based

Grace period (years):	5; 10
Years to maturity:	20; 35
Commitment fee:	0.75; 0.5%
Service charge	0; 0.75%
Front end fee on Bank loan	1.00%

Financing Plan: ☐ To be defined

Source	Local	Foreign	Total
Government	23.00	0.00	23.00
IBRD	4.00	12.00	16.00
IDA	7.40	22.60	30.00
BENEFICIARIES	23.00	0.00	23.00
Total:	57.40	34.60	92.00

Borrower: People's Republic of China

Guarantor:

Responsible agency:
Ministry of Health

Implementing agency(ies):
National Patriotic Health Campaign Committee, China Water Supply and Sanitation National Project Office
Address: 17 Government Street
Changping County
People's Republic of China
Contact Person: Mr. Zhang Yiren, Standing Deputy Director
Tel: (86-10) 6974-4468 Fax: (86-10) 6974-4437 Email:

Estimated disbursements (Bank FY/US$M):

FY	2000	2001	2002	2003	2004	2005	
Annual	6.30	8.40	10.80	10.60	6.70	3.20	

Cumulative	6.30	14.70	25.50	36.10	42.80	46.00	

Project implementation period: July 1999 to December 2004
Expected effectiveness date: 09/15/99 **Expected closing date:** 06/30/2005

OCS PAD Form: October 9, 1998

A: Project Development Objective

1. Project development objective: (see Annex 1)

The proposed project aims 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 principal objective of the project is to provide access to safe, conveniently located water to 3.1 million poor rural people in Anhui, Fujian, Guizhou, and Hainan provinces, and to improve related water and sanitation practices. A supporting objective is to provide the water at the lowest possible cost and to ensure its sustainability through good maintenance and accounting practices.

2. Key performance indicators: (see Annex 1)

1. Number of villagers newly served by project-supplied water meeting national rural water quality standards, with the goal of serving 3.1 million over five years;

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 (b) percentage point improvement compared to the baseline period in key water-related health behaviors;

B: Strategic Context

1. Sector-related Country Assistance Strategy (CAS) goal supported by the project: (see Annex 1)
Document number: R98-107 **Date of latest CAS discussion:** 05/28/98

The China Country Assistance Strategy highlighted human development as one of the five major themes in Bank support for China's development. Within that theme, poverty reduction plays a major program role. The poverty reduction program seeks to increase the resources controlled by the poor, be these income generating (such as improved agricultural land), contributing to future productivity (education), or protecting physical well being (health). Improving rural water and sanitation meets several of those goals. It typically releases labor for other purposes, can itself be a productive input, and by lowering pollutant and pathogen intake by the poor, helps protect their health.

2. Main sector issues and Government strategy:

In the past decade, China has made significant gains in rural water supply. Between 1985 and 1997, the number of rural residents with convenient access to improved water has more than tripled, to over 848 million, or 88.9 percent of China's 954 million rural people. Of these, approximately 407 million people (48 percent of those with access to improved water) presently drink piped water. The remaining 441 million (52 percent of those with access to improved water) use a variety of other sources, including handpumps, shallow and deep wells, and rainwater collectors. The preference of Chinese governmental agencies is for the development of piped systems because of the added convenience and the ease of controlling water quality.

Having access to an improved water source, 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. Only about 95 million beneficiaries of non-piped systems enjoy access to safe water. The remaining 346 million rural residents use water which is improved, but nevertheless still does not meet the standards of safe water.

Therefore, despite recent progress, more than 450 million rural Chinese continue to suffer from unsafe or insufficient water supplies. About 76% of these are individuals having access to improved water which does not meet the quality of safe water, while the remaining 24% lack access to any improved water source. Both of these groups face problems such as water sources with high pathogen loads due to fecal or other contamination; water with high levels of naturally occurring fluoride, arsenic, or salts; growing industrial and agricultural chemical pollution; and seasonal water shortages.

In China, as in other countries, the lack of safe water correlates highly with poverty. Also positively correlated with poverty are behaviors that worsen water-related disease. Examples include failure to protect water sources from contamination, to boil water before drinking, or to wash hands after using the toilet and before preparing or eating food. As a result, many poor rural people suffer from common diarrheal diseases and helminth infections and, more rarely, dysentery, hepatitis, typhoid and cholera.

To maintain momentum gained during the United Nations "International Drinking Water Supply and Sanitation Decade" (1981-90), in 1991, China set 1995 rural water supply goals at: 35 to 50 percent coverage of drinking water meeting international quality standards, including 35 to 40 percent of rural residents receiving piped water supplies. Both goals were met and even more ambitious goals established for 2000. In its Ninth Five-Year Plan, the government announced its targets of providing piped water systems for 50% of China's rural population, and of providing safe water for 85% of all rural residents and 65% of those residing in China's poorest rural areas by 2000.

However, China differs from many other developing countries in that there is not a history of the central government providing large subsidies for the financing of rural water supply and sanitation. Instead, there is greater emphasis on self-reliance with rural people using their own contributions and resources to improve their water supply. This financing structure causes poor rural areas to accurately match their ability to pay with the proper type of systems and level of service. As a result, China is held up as a model for other developing countries. Support for capital costs for water supply is partially provided by the local and/or provincial government. However, this support cannot reach all poor rural areas, and multilateral and bilateral assistance is welcomed by the government.

Health problems caused by the lack of safe water are exacerbated by poor sanitary conditions in rural China. Traditionally, Chinese households collect human waste and transport it to the fields for use as fertilizer, often without further treatment. This practice will undoubtedly continue. The main objectives of sanitation improvements are therefore to improve the standard of latrines and to make reuse practices more hygienic. By 1997, 90 percent of rural households had some sort of household latrine, but most of these facilities are rudimentary at best: they provide temporary storage of wastes and are unprotected from flies and other insect vectors of disease transmission. Only 29 percent of the rural population use "sanitary" latrines, usually defined as latrines with full walls and roof, odorless and insect-free; an additional 27 percent, primarily in county towns, have access to composting latrines that promise high rates of pathogen destruction. The availability of public and school latrines is low, and they rarely meet the "sanitary" standard.

In recent years, China has made substantial progress in addressing sanitation issues. Since 1995, the number of households with "sanitary" latrines has nearly doubled. In the Ninth Five-Year Plan, the government announced the ambitious goal of establishing "sanitary" latrines for 40% of the rural population by 2000. Until recently, efforts by the National Patriotic Health Campaign Committee (NPHCC) to expand the use of improved rural latrines have been decentralized, with most improvements left up to individual provinces or townships.

Nevertheless, the government has made a concerted effort to promote good health-related behaviors. In most rural areas, a network of NPHCC workers, Women's Federation representatives, Youth Leagues, local epidemic prevention stations, and schools have led health education campaigns encouraging a wide array of hygienic behaviors. That work, combined with a high literacy rate (even in poor areas), has led to widespread knowledge of many basic health behaviors, such as the importance of drinking boiled water.

However, actual behavioral change has been slow to follow, especially in poor areas where fuel may be scarce and understanding of the link between raw water or unwashed hands and diarrhea is tenuous. Thus, the problem is more one of the effectiveness of health messages than of their dissemination: health education in most rural areas provides little concrete information to link hygienic behavior to improved health, and most provinces still lack specialized health education training.

As a result, significant disparities exist between poorer and wealthier rural counties, both among and within provinces in China. While a number of wealthier and middle-income rural counties have experienced tremendous health-related benefits as a result of improvements in water supply and sanitation, poorer counties with more limited resources have yet to receive similar benefits and still require additional support in order to carry out the changes necessary for improved health gains.

3. Sector issues to be addressed by the project and strategic choices:

This project aims to complement China's efforts in improving rural water supply and sanitation and build on previous Bank Group sector experience, by providing financing to 27 counties in 4 provinces for water supply, sanitation and health education, and project management. It adopts a linked approach in which physical investments in water supply are combined with efforts in sanitation and health education, and efforts in project management, in order to maximize the benefits in terms of time, cost, and increased productivity gained from improved water supply. An IDA credit of $30 million and IBRD loan of $16 million will make up 50 percent of the project's total investment of $92 million; the other 50 percent will be provided by provincial and local governments, and by the individuals benefiting from the project. Ultimately, most of the costs of the project will be borne by individual beneficiaries, through capital and in-kind contributions and through water tariffs that finance loan repayment.

This project addresses the following three key issues: 1) expansion of safe water supply in poor rural areas; 2) improvement of existing efforts in sanitation and health education; and 3) strengthening of the project management capacity. The strategic choices involved in each are discussed below:

Water Supply. As discussed earlier, over 450 million rural Chinese still lack access to safe water supply. This project would alleviate the problems of 3.1 million individuals by providing safe water supply systems which are sustainably financed. In recent years, Chinese governmental agencies have shown a heavy preference for the development of piped systems in many rural areas. Of the total rural population that is currently adequately served with safe water, over 80 percent get their water through piped systems. Although construction and maintenance costs per person for piped systems are often higher than for hand pumps or similar facilities, government officials prefer piped systems when financing can be arranged because of the added convenience and the ease of controlling water quality. However, as long as adequate measures are taken to protect the sources, handpumps, wells, and rainwater collectors may also be used to provide safe drinking water. Handpumps often serve communities where population is sparse and/or ground and surface water is scarce; rainwater collectors are primarily used in mountainous regions, where rainfall is plentiful, but access to surface water is difficult. One key concern is therefore the nature of the water supply system itself. A second is the overall size and capacity of the individual system. This project will ensure that village input is sought in both regards, when determining the appropriate scheme for water

supply for each individual sub-project. Responsibility for the management of the water system will lie with the village(s) and/or township(s), depending on the overall complexity of the system.

Sanitation and Health Education. International experience has shown that promotion of sanitation and health education, in conjunction with improvements in rural water supply, raises the overall impact of the project. For this reason, sanitation and health education efforts will be incorporated into this project, as was also the case with the second and third rural water supply projects in China. As mentioned earlier, existing efforts often fail to foster effective understanding of the link between certain hygienic behaviors and improved health. This project will focus on constructing very specific health messages and carefully targeting the messages' audience, rather than delivering general injunctions to behave well.

Most poor rural areas in China are also in need of physical improvements in sanitation. Improvements which increased the pathogen kill rate would have positive impact on overall health. However, the cost associated with construction of a "sanitary" and/or composting latrine are high enough to place them out of the reach of most villagers in poorer counties. Moreover, while some positive social externalities can be obtained from construction of improved latrines in private households, it is not clear that these are large enough to justify the substantial subsidies necessary to finance such sanitation improvements. This project therefore focuses more on raising the awareness of the benefits of improved sanitation by construction of demonstration latrines in village schools and in three households per project village, and will provide information to households on design alternatives and their costs through the health and hygiene education program.

Project Management. Finally, efforts will need to be made to increase the capacity of the various project offices to provide services to beneficiary villages. Project office staff will need to obtain training in various project management skills. Efforts will also need to be made to determine effective strategies for conveying sanitation and health education messages and for inducing actual behavioral change.

C. Project Description Summary

1. Project components (see Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown):

The project will comprise of the following for each of the three main project components:

Water Supply: Provision of safe water, suitably financed, to poor communities currently lacking such supplies. This will include both piped as well as non-piped systems (i.e. handpumps and rain catchments). Also, in order to ensure low-cost operation and project sustainability, the project will provide support for training of water system manager(s), operator(s), and accountant(s). Users will be expected to pay for the full cost of the water, net of government investment.

Sanitation and Health Education: Assistance to ongoing rural sanitation and health education efforts. This component would work with primary school teachers, village doctors, Women's Federation representatives, and public health systems in their efforts to improve water use and sanitation practices in the villages. It would support demonstration programs to increase use of improved latrines; the preparation of health education messages aimed at expanding the adoption of improved sanitation and hygiene practices among the target beneficiaries, primarily housewives, school-aged children and decisionmakers in households; and training of health education specialists in delivery of those messages.

Project Management: Support to increase project office capacity to provide services to beneficiary villages. This would include surveys and research on effective strategies to expand adoption of improved sanitation and convey health messages. It would encompass training in project management skills such as procurement, water supply technologies, water quality protection, and health message delivery.

A summary of the costs of each of these components is listed below:

Component	Sector	Indicative Costs (US$M)	% of Total	Bank-financing (US$M)	% of Bank-financing
Water Supply		74.20	80.7	40.90	88.9
Sanitation and Health Education		7.30	7.9	3.70	8.0
Project Management		4.90	5.3	1.20	2.6
Total Project Costs		86.40	93.9	45.80	99.6
Interest during construction		5.40	5.9	0.00	0.0
Front-end fee		0.20	0.2	0.20	0.4
Total Financing Required		92.00	100.0	46.00	100.0

2. Key policy and institutional reforms supported by the project:

No key reforms, beyond those identified in the third project, will be necessary in this project, since the necessary policy and institutional arrangements have already been established in the Bank's three previous rural water supply projects in China --Rural Water Supply (RWS) Project (Cr. 1578-CHA), Rural Water Supply and Sanitation (RWSS) Project (Cr. 2336-CHA), and National Rural Water Supply (NRWS) Project (Cr. N027-CHA).

3. Benefits and target population:

The project investment strategy targets benefits on poor villages, while seeking a positive net present value (NPV) of investments. Because economic demand for safe water is positively correlated with income, NPV from private water demand would have been maximized by targeting unserved, yet high-income, villages. Instead, the project strategy recognizes that important public health and social welfare externalities are not captured in private demand. Because of concerns regarding these externalities, the project centers on obtaining positive, though not necessarily maximized, system NPVs, and on having systems yield adequate returns to ensure project financial sustainability.

Based on case studies in earlier, similar China projects, private demand for the new system derives primarily from time savings in fetching water. However, improved water supply has been shown to have a broad array of other benefits such as reducing waterborne diseases and providing an input to production. Previous rural water projects in China have shown that project investments in rural water supply and in better health and sanitation behaviors result in significant improvements in the health of many rural residents. An international literature review of similar projects has shown that moving to safe water reduced diarrheal morbidity by 16 percent, and substantially increased water quantities reduced morbidity 25 percent, with a joint effect of 37 percent if both conditions were met. Hygiene education also offers documented improvements in health outcomes. The Implementation Completion Report for the Bank's first rural water supply (RWS) project (Cr. 1578-CHA) reported sharp declines in morbidity of dental fluorosis among children, in dysentery and in water-borne diseases in nearly every project county, as well as substantial savings in medical expenditures incurred by households.

An operating financial covenant requiring that water tariffs cover all operations and maintenance costs and the greater of (a) interest charges and depreciation or (b) debt service, combined with a 25 percent initial villager capital contribution, serves as a key decision variable for village participation in the project. The corresponding tariff is estimated during feasibility studies and villagers choose whether or not to participate, and choose among system alternatives, based on those estimated costs. The tariff alone meets the financial sustainability requirement and would yield at least a 3 percent economic rate of return (ERR) even in the absence of consumer's surplus. Although the investment-decision rule faced by the community implies a minimum expected positive ERR, it does not automatically follow that consumer's surplus would be sufficient to raise the ERR above the 12 percent discount rate used for Bank Group China projects, hence yield a positive NPV. Actual project consumer surplus will vary by village, and indeed by season for a given village, and be highly dependent on the cost of alternative supplies. Where alternative supplies are currently available at a slightly higher economic cost than those from the proposed project, consumer surplus will be low. However, villages with such alternative supplies are unlikely to bid for the project, for they face a relatively high risk of facing negative net benefits from project investments. The positive externalities associated with improved public health and social welfare, although not explicitly estimated, reinforce the expectation of a positive NPV from the investments in safe water.

4. Institutional and implementation arrangements:

Implementation Timetable:
Past Bank rural water supply projects in China have focused on building small, primarily piped water systems designed to satisfy an estimated 15 year demand. Total project implementation time would be about 5 years. Approximately 10-15% of the water systems will begin construction in the first and fifth years, with higher proportions falling in the middle years. Based on experience under the NRWS project (Cr. N027-CHA), each year's implementation cycle begins with consultations and village-level feasibility studies and the development of procurement lists; these annual work plans are consolidated at the national level and submitted to IDA/IBRD for review in the fourth quarter of each calendar year, for construction beginning the first quarter of the following year. This arrangement has proven quite satisfactory under the NRWS project, and allows ample time for discussion on any issues that may arise between the Bank and the borrower.

Project supervision would monitor impact with respect to the objectives and focus on key sector issues such as beneficiary participation in system design, water plant operator and accountant training, and socioeconomic and health impacts of the project. Bank Group experience with supervision of the RWSS project (Cr. 2336-CHA), which like the proposed project covers a large number of counties, suggests that supervision would require about 85 staff-weeks over the life of the project, of which about 60 staff-weeks would be in the field. The Bank resident mission will provide initial review of procurement actions. More intensive supervision would be required during the first three years of the project, during which time project counties would gain experience with new means of beneficiary participation and national and international procurement. Supervision would be provided by financial analysts, water systems engineers, health and sanitation education specialists, and other specialists as needed. *Assurances were obtained at negotiations that a mid-term review, to be undertaken no later than June 1, 2002, will review progress in meeting project objectives, as reflected by the monitoring indicators. The review will identify any changes needed to meet those project objectives, including but not limited to reallocation of funds and commitment of additional counterpart funds. Also, assurances were obtained at negotiations that the NPO will (i) prepare, not later than six months after the Closing Date, or such later date to be agreed with the Bank, a plan for the future operation of the project; and (ii) afford the Bank a reasonable opportunity to exchange views on said plan.*

Implementing Agencies:
The responsibility for project management and implementation is divided among national, provincial and county levels. At each level, Leading Groups will be established to provide policy guidance and advice of an intersectoral nature. Their responsibilities include: (a) formation and staffing of project offices; (b) oversight of project offices; (c) resolution of policy issues that arise during project implementation; and (d) coordination of project issues across project related government bureaus. The National Leading Group is headed by the Minister of Health. Provincial Leading Groups are headed by standing vice-governors responsible for health matters, with at least two bureau directors as members. County-level Leading Groups are headed by county magistrates and such bureau directors as the magistrate deems important to project execution.

Descriptions of the composition and the specific implementation responsibilities for the project management offices (PMO) at each level are as follows:

National Project Office. The National Project Office (NPO), which was established to manage the RWSS Project, is attached to the Ministry of Health. Its working site is part of the China Rural Water Supply Technical Center, which provides logistical support to the NPO. The NPO has a staff of 20, including one director, one deputy standing director, one deputy director, three water supply engineers, four health education and sanitation specialists, three accountants, two procurement officers, one interpreter, and four staff members for general affairs. The NPO is responsible for overall project design, general project guidance to Provincial Project Offices (PPO) and County Project Offices (CPO), and monitoring of project progress and quality. Specific responsibilities include:

(a) **Design Review**: *Assurances were obtained at negotiations that the NPO would appraise, using agreed criteria, all water supply investments with an estimated total investment above Y 3.0 million for the quality of their engineering and financial preparation and their overall feasibility. Procurement of project-related works would not commence prior to successful NPO appraisal.* In addition, the NPO will be expected to conduct site reviews of not fewer than 8 of the largest provincial projects in any given year.

(b) **Procurement**: The NPO will formulate, lead, and monitor all International Competitive Bidding (ICB) procurement of goods.

(c) **Agreements**: The NPO will execute all agreements related to the project and will ensure compliance with regulations applicable to the project.

(d) **Baseline Surveys**: The NPO will develop and oversee the carrying out of the project baseline surveys. *Assurances were obtained at negotiations that the provinces will complete the baseline surveys for villages receiving new water supplies in 2000 and submit them to the NPO no later than December 1, 1999. The NPO shall consolidate and analyze those surveys, submitting them to the Bank no later than January 1, 2000.*

(e) **Training**: The NPO will be responsible for organizing and implementing training programs at the national level.

(f) **Sanitation and Health Education**: The NPO will be responsible for the development of

health education materials.

(g) **Project Reporting and Annual Work Plan**: The NPO is responsible for consolidation of provincial project reports and for mandatory progress reporting to the World Bank. *Assurances were obtained at negotiations that a comprehensive project Annual Work Plan (AWP) for the following year would be prepared and submitted to the Bank for review and approval no later than November 30 of each year.*

(h) **Accounts and Audits**: The NPO will prepare a national consolidated account of project expenditures, to be submitted to the Bank no later than 6 months after the end of the fiscal year. The Project Implementation Plan (PIP) details NPO audit responsibilities.

Provincial Project Offices. The PPO staff are drawn from such provincial departments as planning, finance, water conservancy and power, agriculture, urban construction, tax, and patriotic health campaign committee offices. A director and from 12 to 16 technical, financial and operational staff constitute the PPOs. The PPOs are responsible for organization, direction and supervision of the implementation of county-level projects, and for quality of project design and management at the provincial level:

(a) **Design Review**: *Assurance were obtained at negotiations that the PPOs would appraise, using agreed criteria, all investments with an estimated total investment above Y 0.5 million and not exceeding Y 3.0 million for the quality of their engineering and financial preparation and their overall feasibility. Within the mandatory review limits, procurement of project-related works would not commence prior to successful PPO appraisal.* In addition, PPOs will be expected to conduct site review of no fewer than 20 projects per year, including at least two projects below the mandatory review limit size.

(b) **Procurement**: PPOs will arrange for the formulation of annual ICB goods procurement lists, and subsequently, for the acceptance and distribution of goods received under ICB procurement. They will manage procurement of civil works contracts with an estimated value of more than $100,000.

(c) **Training**: PPOs will be responsible for planning and execution of the provincial-level training program. They will lead the training for the county health education programs, and will assist the NPO in the design of health education materials.

(d) **Project Reporting and Annual Work Plans**: PPOs will consolidate all investment implementation information and prepare monitoring reports to be submitted to the NPO, for further consolidation and submission to the Bank. *Assurances were obtained at negotiations that provincial project AWPs for the following year would be prepared and submitted to the NPO for review and approval no later than October 15 of each year.*

(e) **Accounts**: PPOs will prepare consolidated accounts of provincial project expenditures, to be retained at the PPO for mission review. They will carry out an annual review of all water system and county-level audits ensuring that counties act on audit findings.

County Project Offices. The CPOs work under the guidance of county-level Leading Groups and have 12 to 15 staff drawn from the same range of technical backgrounds as the provincial project offices. The CPOs will include qualified construction supervision staff and have recourse to county-level quality

assurance offices when additional supervisors are needed The CPOs are responsible for project planning at the county level, including design, construction and supervision of water supply investments at the township and village level:

(a) **Design Review and Supervision**: The CPOs have responsibility for approval of designs with investment cost less than Y 0.5 million. Designs are completed only after feasibility studies in which villages participate. The village committee must formally approve the concept to be developed. Where CPOs lack sufficient supervisory expertise, they will contract local construction quality assurance offices to augment that capacity. *Assurances were obtained at negotiations that for all water systems with total investment above Y 0.5 million, the county quality assurance office would be retained to verify that construction practices and standards have met design specifications.*

(b) **Procurement**: CPO procurement responsibilities include preparation of procurement documents and all aspects of the civil works tendering, bid evaluation and award process.

(c) **Sanitation and Health Education Program**: CPOs also have responsibility for planning, design, construction and management of sanitation facilities under the project, as well as for assisting the NPO in carrying out the project baseline survey. They will work with the NPO and PPOs in designing health education work and will execute the resulting work program.

(d) **Project Evaluation and Reporting**: The CPOs are responsible for preparation of quarterly implementation progress reports for submission to PPOs, and for ensuring that audit requirements under the project are met.

(e) **Audit**: CPOs will prepare consolidated accounts of county project expenditures, to be retained at the CPO for mission review.

Communities. The communities benefiting from the project will (a) decide their participation in the project and level of service by choosing to sign the village commitment letter and paying the upfront cash contribution, or not; (b) provide in-kind contribution of labor and materials needed for construction of the water facilities; (c) supply (in most cases) the water facility manager, operator and accountant who will be responsible for operating and maintaining the systems and collecting tariff revenues; (d) pay a water tariff sufficient to meet the operating revenue covenant; and (e) coordinate with the County Finance Bureaus repayment of the loan and credit. Communities, either at the county, township or village level, will ultimately take over ownership of the water facilities depending on the scope of the investments.

D: Project Rationale

1. Project alternatives considered and reasons for rejection:

Sanitation physical investments: Most of the physical investments in this project are related to water supply rather than sanitation. This is because in previous Bank projects in China, efforts in sanitation and health education have fared worse than water supply. The Bank's first project supported only water supply. The Implementation Completion Report from the first project noted that integration of water supply with health education and sanitation would substantially increase health impacts. The second therefore added such components. The sanitation work sought to replace existing latrines with composting latrine models having high pathogen kill rates. Unfortunately, the cost of meeting mandated material and construction quality requirements of the approved latrine designs placed them out of reach for most of the poor villages targeted by the project. The issue of affordability was remedied in part through subsidies; however, these failed to provide even a short-term solution for individual poor households. The third project recognized from Chinese and international experience that willingness-to-pay (WTP) for improved latrines correlates highly with income. In the poor areas served by this project, if individual households with a high WTP could be identified, the village has the option of investing in designs and other technical assistance, but the emphasis under the project is on changing water and sanitation-related behavior. The proposed fourth project would follow on this model.

Project area selection: The major design challenge is to target funds on those who are poor but nonetheless have sufficient resources to upgrade their water supply once long-term financing can be provided. The main risk is that these funds will be captured by middle-income communities rather than the poor (higher income communities have already moved to safe piped water supply). With the exception of Guizhou province, this project uses designation as a national- or provincial-level poor county as a basic targeting tool. Experience from previous water supply projects in China has shown that this approach has been met generally with success. In each province, the participating counties were selected according to their: (a) rural poverty, in which the poorest counties were given first rights of participation; (b) percentage of rural people lacking access to improved water supplies; (c) number of people exposed to unsafe water, as evidenced by fluoride or alkali content, or by the incidence of gastrointestinal illness; (d) existing provincial plans targeting priority areas of rural water improvement; (e) demonstrated ability to provide the needed counterpart funds; and (f) willingness to form and staff a county project office to agreed standards. Because Guizhou is one of China's poorest provinces, county selection criterion was widened to include all counties, with particular emphasis on the county's need for water supply improvements and the beneficiaries' ability to repay the loan/credit. To minimize the risk that funds will be diverted to middle-income communities, this project will not finance any water systems in county seats in any of the four provinces, given our expectation that these areas are able to finance these projects themselves.

Given the repayment constraint, the project does not target the poorest of the poor villages which are not able to afford the long-term costs of the project. While many of these villages are in need of improved water supply, they will have to rely on grant programs to provide financing. Instead, this project targets those poor villages just above this level, with the resources to upgrade their water supply once long-term financing is provided. Within each of these beneficiary villages, the poorest people will gain access to safe water. Because of the repayment constraint, and also the importance of building financially self-sustaining water systems, this targeting was deemed appropriate.

2. Major related projects financed by the Bank and/or other development agencies (completed, ongoing and planned).

Sector Issue	Project	Latest Supervision (PSR) Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
Bank-financed			
Rural water supply	China Rural Water Supply (Cr. 1578-CHA)	NA	NA
Rural water supply, sanitation, and health education	China Rural Water Supply and Sanitation (Cr. 2336-CHA)	S	S
Rural water supply, sanitation, and health education	China National Rural Water Supply (Cr. N027-CHA)	S	S
Other development agencies			
Rural water supply and sanitation	UNICEF: 1996-2000 Water and Environmental Sanitation Programme		
Health education and rural water supply technical assistance	"Knowledge for Life" program UNDP/World Bank Water and Sanitation Program (WSP)		
Rural water supply technical and preparatory assistance	1991 "Capacity Building and Investment Preparation for rural Water Supply and Sanitation in Poor and Remote Areas" (CPR/91/141)		

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

3. Lessons learned and reflected in the project design:

Cost recovery: Earlier projects established that Chinese villagers, even in poor areas, would contribute capital and pay tariffs sufficient to finance safe and convenient water supply. Furthermore, despite abandoning collective farming, the village collective management structure remains sufficiently robust to manage water systems. The Bank's Operations Evaluation Department's evaluation of the first China rural water project financed by IDA confirmed that finding, as well as financial and health benefits from water supply investments. The second (RWSS) project was completed in December 1998. From this, we expect to obtain some quantification of the levels of cost recovery. Identified weaknesses in both projects include occasional excess optimism, hence system overdesign, and the need to improve quality through increased project office supervision of design and construction. Measures will be taken in this project to ensure that these weaknesses are corrected. The economic analysis for the third (NRWS) project, as well as interviews with potential beneficiaries, showed that even the poorest villagers consider the health gains from clean water supply well worth the minimal upfront costs. Nearly all villagers are able and willing to pay for such investments. Despite some weaknesses in a limited number of sub-projects, overall, by international standards, water supply projects in China are extraordinary in their cost recovery and sustainability.

Need for greater focus on education rather than physical sanitation investments: Experience from earlier projects suggest the importance of focusing efforts on health and hygiene education, rather than physical

sanitation investments, as a means of inducing behavioral change. For more details, see discussion above in Question 1.

Need for realistic expectations in terms of behavioral change:
Although basic health knowledge is fairly widespread, behavior in rural areas often does not match that knowledge. Experience from the previous projects suggests that even with higher quality education efforts, actual behavioral change can be a slow process. Slow progress in changing behavior does not invalidate health education efforts. A peer reviewer for the third water supply and sanitation project pointed out that, "on a dollar-to-dollar basis, it costs less to achieve health benefits from sanitation and health education than from making water available." Previous projects in China as well as others worldwide have demonstrated the importance of careful targeting and very specific health messages, rather than general injunctions to behave well. This project will build on the experience acquired in the previous three projects in China, and continue to support the use of monitoring indicators and baseline surveys to help refine health messages and their delivery, thereby increasing the efficiency of these efforts.

Need for strong project management at the national, provincial, and local levels:
Previous experience has shown that the most successful Bank-financed projects in China have a strong commitment from the borrower as well as strong leading groups and strong PMOs at the national, provincial, and local levels. The PMOs must be staffed with qualified, experienced, and competent staff in the key areas of engineering, procurement, accounting/finance, and sanitation and health education. This project will ensure that the same requirements for project management are kept at all levels. Development of the capacity of PMOs at all levels will be addressed through training workshop programs during project preparation and implementation.

Need for measures to safeguard against overdesign of water systems:
In the second (RWSS) project, a limited number of water systems were overdesigned, with negative effects for cost recovery. This was because in the RWSS project, the criteria for system design were determined on an ad hoc basis. To correct for this problem, for the third (NRWS) project, the design manual was updated and required to be followed. Also, increased emphasis was placed on rigorous review of designs to ensure that they are realistic with actual local consumption needs, and World Bank monitoring of the review process was increased. This project will follow those measures taken by the NRWS project.

Need for quality maintenance:
Another lesson gathered from the RWSS project was that of the necessity to provide training in operations and finance to local water plant staff in order to maintain the quality of each individual scheme. In the RWSS project, funding for such training was not included in the project and had to come out of local government budgets. As a result, training in some instances was inadequate, and the quality of the investment was not always successfully maintained. This was corrected in the NRWS project, with the inclusion of project funding for local training, and will continue in the fourth project as well.

4. Indications of borrower commitment and ownership:

Beneficiaries' commitment to their individual water scheme is demonstrated through their willingness to contribute cash and in-kind contributions upfront to the construction of the water plant. These contributions amount to 25 percent of the overall costs of the project, and represent a substantial investment for most households. Such a payment mechanism, whereby contributions are collected upfront, ensures that only those villagers wishing to participate will receive household connections to the new water supply. In order to make this decision, villagers will need information about the options, costs, and benefits of the new water scheme. Thus, this mechanism also helps ensure that the village and township leadership thoroughly discusses the options and rationale for the project during the design phase for each water system, and solicit villagers' input concerning the design, as the leadership will ultimately rely upon villagers' upfront contributions to help pay for the costs of construction. Previous experience has shown that such a mechanism can be effective means for stakeholders to have a voice in the overall design of a scheme; in the second project, there are a number of documented instances where villagers, after discussions of options with local leadership, triggered significant changes in the design of the eventual water system. All water supply schemes for the project will be required to have the approval of the Village Committee in a document with an official seal. This document will represent the commitment of the village leadership to the water system. Following construction of the water supply system, ownership of the water plant will transfer to the village(s) and/or township(s), depending on the size of the system. The management and staff of most water plants will also come from local villages and townships. This ensures that local beneficiaries have the largest input and stake in the operations and maintenance of the plant. Upon operation of the new system, villagers will continue to receive information about and provide input on water quality. As part of the implementation of the health education component, village doctors, primary school teachers and Women's Federation representatives will also be involved in the information dissemination to the target beneficiaries.

5. Value added of Bank support in this project:

The supply of clean water to rural people is a high priority of the Chinese government, and past experience shows extremely high willingness to pay by project beneficiaries. Even the poorer villages have a proven good track record for long-term cost recovery; however, many poor villages cannot afford the upfront capital costs of constructing even modest systems. In China, there is little direct financing for the rural water supply and sanitation sector from the central government. Instead, rural people rely mainly on their own contributions or local government subsidies to improve water supply. The IBRD loan / IDA credit and government counterpart financing will allow the beneficiary upfront capital contribution to fall from 100 percent to 25 percent of total investment, considerably broadening the number of villages able to invest in safe water supply. Bank involvement thus allows capital costs to be met on a long-term basis, with most villagers paying no more than 3 percent of annual income for access to safe water supply. Without the Bank's support, most project villages would not be able to invest in the proposed water supply improvements. Bank involvement also ensures that water supply and treatment plants are more technically sound than might otherwise be the case.

Moreover, the Bank can bring international experience to bear on the issues of health and sanitation education – issues which have been well-covered by China's mass education campaigns, but need to be more effectively implemented. Health messages may be better targeted and alternative sanitation designs may be proposed and implemented as a result of the Bank's involvement.

E. Summary Project Analysis (Detailed assessments are in the project file, see Annex 8)

1. Economic (supported by Annex 4):

○ Cost-Benefit Analysis : NPV=US$ million; ERR = %
○ Cost Effectiveness Analysis
● Other

Ideally, participating villages would be chosen by evaluating the NPV generated by water investments, including public health, social welfare, or other externalities, and choosing that set of investments that maximized the surplus value across all villages. However, generating such information over the nearly 500 piped water and 300 non-piped systems proposed would be excessively costly, if even possible to an acceptable level of uncertainty. A robust alternative test has been chosen, that of requiring villages to pass a test of revealed demand—a willingness to supply 25 percent of upfront capital costs and levy water tariffs that cover the full operating costs of and loans incurred by the system. That test, a covenant in the project described more fully in the financial analysis below, justifies the project in terms of private demand. It also guarantees a positive private economic rate of return and, as shown in greater detail in the Economic Analysis contained in Annex 4, can be expected to result in a positive net present value for the project.

2. Financial (see Annex 5): NPV=US$ million; FRR = %

Government Counterpart Financing

Provincial Finance: Provincial counterpart funding is expected to average 5 percent, or $4.8 million, of the $92 million total project financing requirements. Provincial revenues allocated to fund this project are from several sources: agriculture, enterprise and commercial taxes, and special allocations from the Drinking Water for Humans and Animals Fund and Small-Scale Water Conservancy Project Fund. Due to project financing commitments, on average, rural water supply, health education and sanitation expenditures of the participating provincial governments will increase between 3 to 40 percent during the implementation of the proposed project. However, the provincial counterpart funding requirement remains less than 0.2 percent of projected provincial on-budget expenditures, and in the event prefectures or counties are unable to meet their counterpart funding obligations during implementation, provinces should be able to meet the shortfall.

Prefecture, County and Township Finance: Prefectures, counties and townships contribute the largest share of proposed government financing—20 percent, or $19.2 million, of total project financing. These governments, through their finance bureaus, provide all funding not met by the IBRD loan / IDA credit, beneficiaries and provincial government contributions. In addition to funding CPO costs, their budgets are expected to bear a share of the provincial and national project office management fees, and finance the non-Bank-financed portion of local health and sanitation training. With the beneficiaries, they will finance a portion of water supply, the full amount of sanitary latrine construction, interest during construction, and transport, taxes and duties on goods and equipment.

In the past, the project counties have varied in their rural water, health education and sanitation spending as a proportion of budgetary expenditures, ranging from 0.5 to 6.2 percent. With the proposed project, annual county-level spending on these sectors will range from 0.5 to 2.6 percent of budgetary expenditures. As a criterion for county selection, county budgetary revenues plus transfers had to yield a large enough surplus to service the debt on the IBRD loan / IDA credit and contribute the agreed amount of county counterpart financing. The respective provincial finance bureaus are responsible for independently assessing the ability of the prefecture and county governments to provide the required counterpart funds from assured sources and identifying to the Bank the sources of those funds. During implementation, the pattern of county and

township financing will vary across years to meet the physical progress needs of construction.

Beneficiary Financing

Benefiting villagers are expected to pay between 75 and 100 percent of the water supply capital costs: in-kind labor and materials contributions (typically 10 to 15 percent of the water facility investment costs), together with upfront cash payments collected prior to construction, make up 25 percent of capital costs. Through tariffs, the beneficiaries repay the county for the 50 percent of the capital costs covered by the IBRD loan / IDA credit. The local government contribution (25 percent of capital costs) may also be recaptured through the water tariff, at the option of the local government.

Beneficiaries will face per capita investment costs averaging between Y115 and Y250 for piped water systems, between Y140 and Y210 for deep-well handpumps, and Y365 for rainwater collectors. Project village committees will collect the community and villager cash contributions about 3 to 6 months in advance of construction to ensure firm commitment from the beneficiaries and to cover startup costs.

The project will seek to identify villagers willing to construct improved household latrines at their own expense, and in such cases provide technical assistance. In villages where no such households can be found, but some villagers are able to contribute at least half the cost of an improved latrine in labor and materials, the project will make a limited amount of funding available to assist in purchasing inputs, for no more than three household latrines per village. The latter expenses will be covered either by Bank financing or government grants. By county option, beneficiaries may bear project office management costs through the water tariff.

Recovery of Water Supply Costs

Rural beneficiaries in China have a long history of paying water supply operation and maintenance costs, as well as a large portion of the capital costs. This has been true under the three previous Bank-financed projects and the practice will be continued under this project. In addition to the capital contributions mentioned above, the tariffs will be set locally and reviewed annually by the CPOs to ensure that they cover the full costs of water supply. *At negotiations, assurances were obtained that, commencing not later than the second full fiscal year of operations of such investment, water charges will be established and collected annually at a level sufficient to cover operations and maintenance costs, administrative costs, taxes, and the greater of (a) interest charges and depreciation, or (b) debt service requirements (interest plus principle repayment).* No subsidies from government on water supply credit repayment are anticipated, so tariffs will fully cover these expenses. Water charges are expected to total Y 29 to Y 62 per person per year (no more than 4 percent of average per capita gross income) depending on location, type of service, and water volume consumed.

In many smaller communities with piped water systems, water usage is billed according to household size rather than metered usage. Although this in theory discourages conservation, such supplies are often intermittent, limited to morning and evening peak demand periods, and the investment and administrative costs of metering outweigh any efficiency gains. The few poor communities with strong collective enterprises may use those revenues to partially cover the cost of water. Where water plants offer 24-hour water supply, the NPO and the Bank encourage the installation of household meters to manage demand. Rainwater collectors that serve individual households involve large upfront costs, but negligible operations and maintenance costs. Since these are household systems, debt service costs and capital contribution costs cannot be recouped through a tariff. Rather, government has the choice of capturing those costs through general revenues or assessing lump-sum charges on beneficiaries. Other non-piped systems, such as public

hand pumps, also involve large upfront costs by the end-users. Here, debt service on the IBRD loan / IDA credit and operations and maintenance costs are generally recouped through monthly usage fees based on household size.

Fiscal Impact:

As both local and provincial governments have the option of recovering part or all of the costs of their counterpart financing, the expected fiscal impact of this project will vary depending on how each level of government chooses to exercise this option.

3. Technical:

This project includes a 5-1/2 year implementation program of numerous water supply systems of low complexity, serving communities ranging from small individual villages to clusters of villages in multi-village schemes within a township. Responsibility for design of the water supply sub-projects varies with size and complexity, with CPOs responsible for the smaller, simpler schemes, and increasing use of consultant specialists and design institutes as complexity and size increase. Guidelines for this and related training to PPOs and CPOs are provided by the NPO. Subprojects must be developed through feasibility studies carried out in accordance with the agreed framework, addressing technical, financial, operation and maintenance, management and environmental issues

Project design entities must use the "China Rural Water Supply Engineering, Planning, and Design Manual" (1998 edition), which includes all of the technical standards for the design of rural water projects in China. The quality of water supplied must meet the national standards for rural water supply. The design manual provides guidance on such items as water source selection considerations, unit water demands appropriate to a range of situations, pump selection, treatment processes, disinfection and controls. Professional judgement is required during the feasibility study and design phases to ensure unit demands and projections are not overstated, resulting in facilities too large for actual demands. Adherence to the manual and a provision for comprehensive review of all designs helps ensure that appropriate, affordable and sustainable options are chosen and efficient, cost-effective designs result.

The water sources are mainly groundwater (underground aquifers and springs) with the remainder utilizing surface water from streams and rivers, or rainwater collected in underground storage tanks. Water sources are assessed by the local Water Resources Bureau during the project development phase and during the operational phase, water quality of sources is monitored regularly by County Anti-epidemic Station.

During preparation of this project, feasibility studies and preliminary designs of the water supply sub-projects included in the first year (2000) investment program are being carried out. The draft feasibility reports of 27 of the 43 first year sub-projects were reviewed during pre-appraisal. In most cases, the proposed systems were technically acceptable. In a limited number of cases, problems emerged including unit demands being too high for local conditions resulting in unrealistic and unsustainable designs. These were discussed during pre-appraisal and corrective measures are being taken. During April and May 1999 preliminary designs will be completed and the data from them will be used to compile the materials and equipment lists to be included in the first of the annual ICB procurement packages. This process will occur annually during the project.

4. Institutional:

a. Executing agencies: Overall execution of the project will be the responsibility of the NPO. This agency has extensive experience in managing Bank financed projects. Its staff is very familiar with Bank procedures and guidelines.

b. Project management: Day-to-day implementation and project management will be the responsibility of the PPOs and CPOs, and will be supervised by the NPO. The NPO will provide training for the staff of the PPOs and CPOs to ensure that they are familiar with all aspects of the project and the latest Bank procedures.

5. Social:

Land Acquisition and Resettlement

Reflecting the expectation that the land acquisition and resettlement impacts of the project will be modest and the fact that the actual impacts will be known only on a year-to-year basis, the Bank Group did not seek an overall Resettlement Action Plan (RAP) for the project. Rather, a Policy Framework for Compensation, Resettlement and Rehabilitation of Project-Affected Persons (see PIP) was agreed with the government during negotiations. The Framework requires each CPO to prepare an annual Resettlement Inventory if fewer than 150 people are affected and otherwise to prepare a RAP. Each annual Inventory or RAP will be reviewed by the respective PPO and the NPO for conformity with the Framework and included in the NPO's AWP. *Assurances were obtained during negotiations that each province will carry out or cause to be carried out the resettlement of persons affected by the project according to the agreed Resettlement Policy Framework and in a manner satisfactory to the Bank.*

Investments that may invoke Chinese law or Bank Group policy concerning land acquisition are village-specific or multivillage piped water supply schemes. In most instances, the amount of land acquired for each treatment plant is no larger than 4-8 mu (4/15 to 8/15 hectare). Only in a few instances does land acquisition exceed 8 mu (8/15 hectare). To ensure that planners minimize land acquisition, the Policy Framework stipulates that where planned or actual land acquisition exceeds 3 mu (1/5 of a hectare) for any individual investment, the county will be required to obtain PPO no-objection in addition to any local clearances needed. Where planned or actual land acquisition exceeds 5 mu (1/3 of a hectare) for any investment, or where residential buildings will be acquired, the county will be required to obtain NPO no-objection in addition to any local clearances needed. Considerable flexibility usually exists in water plant siting, so that housing or other buildings need rarely, if ever, be acquired. On the other hand, acquisition of cultivated land may be difficult to avoid. Where that happens, the current users will be compensated in a fashion that maintains or increases their standard of living.

Ethnic Minorities

Ethnic minorities constitute a disproportionately high percentage of the overall beneficiary population. In China, ethnic minorities make up approximately six percent of the country's total population. Of the project's 3.1 million beneficiaries, close to 600,000, or 18.4 percent, are ethnic minorities. The majority of the ethnic minority beneficiaries are found in Guizhou province, where the 484,000 minority beneficiaries constitute nearly 60 percent of the total. One of the counties in Guizhou is a minority autonomous county, and in total, provincial officials plan to include 77 minority townships in the project. Ethnic minority beneficiaries also number 92,000, or 15.4 percent of the total beneficiary population, in Hainan, where half of the total project counties are minority autonomous counties. In Anhui, the number of the ethnic minority beneficiaries is 23,200, or 1.8 percent of the total beneficiary population. Only in Fujian are there no

minority beneficiaries expected in the project.

6. Environmental assessment: Environment Category ☐ A ☐ C ☒ B ☐ FI

The balance of the environmental impact is expected to be substantially positive; however, potential adverse impacts from construction or a failure to protect water supply sources require the classification of the project as Category B in terms of the Operational Directive on Environmental Assessment. The PIP details the environmental mitigation plan developed for the project. The project relies on a thorough review and supervision process to ensure that environmental concerns are answered. Several organizations share responsibility for recognizing and mitigating environmental problems. The most important work is completed during the design stage. Designers must recognize potential problems and design to avoid them. This includes attention to the quality and nature of water sources, the engineering and construction practices dictated in bidding documents, the provision for chlorination or other water treatment, and, in health education, inclusion of the key health practices. The design responsibilities vary by water supply system size and complexity, with county project offices undertaking the easier work themselves and commissioning the more difficult. Chinese design manuals incorporate guidelines for proper water system construction practices (i.e., minimal ground disturbance, source protection). Design review is provided by the provincial or national project offices for larger projects. At each review stage, good environmental practice will be one evaluation criterion. County construction quality assurance offices must certify that designs are adhered to for projects valued at more than Y 0.5 million. Below that amount, CPOs provide that service. Finally, for piped water systems, the county environmental protection bureau must certify that the project complies with government regulations that require the designs to contain appropriate environmental protection, and ensure that construction and operations observe those regulations. Thus, standard engineering reviews are supplemented by professional environmental oversight for the systems most likely to have environmental impacts.

Potential environmental problems must be evaluated against the type of water supply system anticipated. The bulk of the beneficiaries would use water from piped systems supplied by wells. Wellheads are in small compounds, protected from surface pollution. Simple chlorination systems are provided in case the regular water quality testing shows problems with bacteria. If the latter occur, they are most likely to enter the system from the pipe network, due to the intermittent operation that characterizes the smallest systems. Villagers will be encouraged to continue boiling water as an additional protection. Other piped systems use surface water supplies, which face a higher risk of bacterial contamination. Many sources are springs, for which special source protection measures, including villager education and physical protection from animal intrusion, will be taken. In the few cases where river water supplies the plant, raw water quality testing intervals will be shorter and continuous chlorination very likely. Such water plants will have personnel trained in water quality testing, equipped with standard test kits. These are employed successfully under previous projects.

Where the improved water supply relies on hand pumps, wells are typically scattered through the villages. Such wells are more vulnerable to contamination from surface water, livestock, or latrines. Consequently, well aprons are designed to prevent surface water contamination, wells are cased, and latrines and animal pens are separated from the wells by minimum adequate distances. Well designs and setback distances are specified by standard design manuals.

A third type of water supply is rainwater collectors. These channel rainfall runoff, generally from the roofs of houses, into holding tanks. To minimize pollution from runoff, the systems are manually operated, with householders instructed to permit the first flush to drain to the ground before directing further runoff into

the holding tanks. Householders are further trained to periodically add bleach to their tanks to minimize risk from bacteria, and to continue boiling water. Tanks themselves are impermeable, with the mouth elevated, covered when not in use, and surrounded by an apron to minimize pollutant ingress at the extraction point. The county epidemic prevention station provides semiannual water quality testing for these tanks.

For any of the well systems, water quality can be a problem due to saline/alkaline water intrusion into permeable aquifers or to high concentrations of fluorides, arsenic, and other potentially toxic materials. These problems draw particular attention in this project, for many of the investments would provide new water sources to escape precisely those problems in current drinking water supplies. Water quality testing would be carried out for all water sources, and where fluoride and arsenic are problems, that testing will extend to careful assessment of the geology of the area, to identify sources unaffected by toxins and unlikely to be affected by them through aquifer recharge. Periodic water testing would then continue to look for evidence of these problems.

Water extraction in the size plant envisioned here is too small to affect groundwater resources other than in the immediate surrounds of the well, where the pumping capacity may exceed the aquifer yield. That might result in damage to the pump, but not to the environment. All new wells would be subject to standard yield tests, the protocol for which was judged adequate by Bank engineers. Similarly, springfed and surface water supplies may not provide sustainable supplies through both wet and dry seasons and in drought periods. However, these local sources are well known, with the larger having documented flow histories often over hundreds of years. Where needed, such as in one county where several plants will draw from the same river, a formal hydraulic study would be made to assess the sustainability of the supply and potential impact on downstream users. Where mitigating actions are necessary, they will be taken.

The project also includes the provision of household and school composting latrines. These latrines, designed to retain fecal material at a sufficiently high temperature for a sufficiently long time to kill most pathogens, clearly improve on the current latrines. They are sealed, hence prevent any passage of pathogens directly into the soil, and when the compost is used on fields it does not threaten surface or groundwater supplies. Furthermore, the latrines are designed to reduce insect access, virtually eliminating that pathogen vector. For all these reasons, and the fact that construction of these latrines should itself have no significant environmental impact, this component presents no environmental risks.

Finally, the health and sanitation education component focuses on modifying behavior to secure the safe use of water or otherwise improve hygiene. Any success in this effort will lead to unambiguous environmental improvement.

7. Participatory Approach (key stakeholders, how involved, and what they have influenced or may influence; if participatory approach not used, describe why not applicable):

a. Primary beneficiaries and other affected groups:

The primary beneficiaries are the rural village residents (IS). When selecting villages to participate, CPO officials consult with village leaders and feasibility studies are carried out for every scheme. Each feasibility study must include a document from the village leaders (CON) confirming the residents agreed to the project, understand the cost levels and benefits and agreed to pay appropriate cash and in-kind contributions and pay tariffs at levels sufficient to meet operation and maintenance costs and repay loans.

b. Other key stakeholders:

Other key stakeholders in the project include the village, township and county level workers implementing the sanitation/health education components of the project (IS); women's groups such as the All China Women's Federation (CON); children benefiting from the health education program (IS); and the educators in the school system (CON).

F: Sustainability and Risks

1. Sustainability:

Local government funding and beneficiary financing through water tariffs provide a framework for project sustainability. Water plants constructed under this project are maintained as independent systems, with tariffs set at a rate to cover the original investment and repay the loan. For most villagers, these tariffs are usually less than 3 percent of their annual gross per capita income. Benefiting villagers are expected to pay between 75 and 100 percent of the water supply capital costs. This payment is broken down as follows: a total of 25 percent of the costs are recovered from an upfront contribution consisting of cash and in-kind labor and materials contribution (typically totaling 10 to 15 percent of capital costs); another 50 percent of the capital costs are captured through tariffs; and a further repayment of up to an additional 25 percent may also be incurred by villagers depending on the percentage of the local government contribution passed down through tariffs. In most instances in the first three projects, this arrangement has demonstrated high levels of sustainability. That would be enhanced under the current project through increased villager participation, better construction supervision and more intensive training of plant operators and managers.

Previous experience has shown that sanitation costs often exceed villagers' willingness to pay. This project will take steps toward ensuring replicability in this area by identifying higher-income households willing to invest in improved sanitation, and by using sanitation education to induce increases in willingness to pay. Health education financed by the project would be integrated with existing government-led programs, and would focus on sustainable behavioral change rather than on simply delivering messages to a target number of people.

On the institutional side, project training would provide the project offices with a foundation for efficient, cost-effective operation of the investment program. Efficient water supply system operation would benefit from training and institutional support in finance and water plant operation and management. Surveys to establish monitoring indicators and baseline conditions will provide valuable information, both for educators targeting health and sanitation messages and for measuring the benefits of this project.

2. Critical Risks (reflecting assumptions in the fourth column of Annex 1):

Risk	Risk Rating	Risk Minimization Measure
From Outputs to Objective		
Excessive extraction from or polluting inputs to the various surface and groundwater sources used by the water systems, forcing either expensive raw water treatment or a move to alternative sources.	N	Feasibility studies will be required for each sub-project and will consider environmental risks and decide on any necessary source protection measures.

Rapid deterioration of sub-project's water quality, as shown by the re-emergence of fluoride and/or arsenic after its initial disappearance.	N	Regular monitoring of water quality is required to be done by the water plant and/or the local Anti-Epidemic station. County Project Offices should ensure that water quality records are kept at each water plant.
From Components to Outputs		
Risk of failure to comply with the operating revenue covenants due to fluctuations in the exchange rate, as repayment obligations are fixed in dollar terms while investments yield only local currency income.	M	Counties are required to factor in Bank Group-estimated purchasing power parity foreign exchange rates, generating higher counterpart funding in Yuan terms.
Project finance risks due to delays or inability to generate counterpart funding at the provincial, prefectural, county, and/or beneficiary level.	M	Past experience shows that beneficiaries have little trouble meeting their 25 percent upfront contribution. If local and provincial governments do not meet counterpart funding commitments, loans may be redirected to other villages and/or counties.
Inability to implement tariff structure due to intervention by local price bureau, thus impairing the financial ability and performance incentives of the water company.	M	Tariff estimates are made as part of each sub-project's feasibility study. These are reviewed prior to an investment being made.
Poor performance of the national, provincial, and/or county project offices.	M	Consultant and national best-practice input in training programs and other issues.
Failure of the health and sanitation program to induce significant change in behavior.	S	Previous experience and required baseline surveys will help target and further sharpen health education programs which stress hygienic water-related practices and water source protection; sanitation investments reduce pathogen loads.

Overoptimistic projections of beneficiaries' consumption levels, leading to system overdesign and difficulties in cost recovery.	M	Project offices are required to follow national guidelines on estimating consumption levels when completing feasibility studies which analyze the sub-project's financial sustainability.
Government restructuring prevents full staffing of provincial and county project offices.	M	Restructuring at the provincial and county levels is set to begin in 1999. This will be monitored and raised as an issue in the future if necessary.
Overall Risk Rating	M	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N(Negligible or Low Risk)

3. Possible Controversial Aspects

G: Main Loan Conditions

1. Effectiveness Condition

Standard conditions for effectiveness.

2. Other [classify according to covenant types used in the Legal Agreements.]

During negotiations, assurances were obtained from the Borrower that:

(a) the provinces will complete the baseline surveys for villages receiving new water supplies in 2000 and submit them to the NPO no later than December 1, 1999. The NPO shall consolidate and analyze those surveys, submitting them to the Bank no later than January 1, 2000; [Dated Covenants]

(b) each CPO and PPO will prepare semiannual progress reports and submit them to the NPO not later than one month following the end of the reporting period. The NPO will prepare and submit a consolidated semiannual progress report to the Bank not later than two and one-half months following the end of the reporting period. The first report would cover two reporting periods, from July 1, 1999 to June 30, 2000; [Dated Covenants]

(c) the NPO will (i) prepare, not later than six months after the Closing Date, or such later date to be agreed with the Bank, a plan for the future operation of the project; and (ii) afford the Bank a reasonable opportunity to exchange views on said plan; [Dated Covenants]

(d) a mid-term review, to be undertaken no later than June 1, 2002, will review progress in meeting project objectives, as reflected by the monitoring indicators. The review will identify any changes needed to meet those project objectives, including but not limited to allocation of unallocated credit funds and commitment of additional counterpart funds; [Dated Covenants]

(e) the NPO will appraise, using agreed criteria, all water supply investments with an estimated total investment above Y 3.0 million for the quality of their engineering and financial preparation and their overall feasibility. Procurement of project related works will not commence prior to successful NPO appraisal [Implementation Covenants];

(f) a consolidated project AWP for the following year will be prepared and submitted to the Bank for review and approval no later than November 30 of each year; [Dated Covenants]

(g) the national consolidated account of project expenditures prepared by the NPO will be submitted to the Bank no later than six months after the end of the fiscal year. Additionally, the following annual audits should be carried out and maintained at the Provincial Finance Bureau for mission review: (i) provincial consolidated accounts prepared by the PPO; (ii) SOEs and Special Account maintained by MOF and the Provincial Finance Bureau; and (iii) county accounts of project expenditures carried out by the CPOs. To ensure better review of large-scale water supply systems, each water plant facility with total investment greater than Y 5 million will be audited at the end of its first full fiscal year of operation in accordance with auditing principles consistently applied by independent auditors acceptable to the Bank, such audit to be submitted to the Bank for review no later than 6 months after the end of the audited fiscal year. [Financial Covenants]

(h) each province will carry out or cause to be carried out the resettlement of persons affected by the project according to the agreed Resettlement Policy Framework and in a manner satisfactory to the Bank [Implementation Covenants];

(i) the PPOs will appraise, using agreed criteria, all water supply investments with an estimated total investment above Y 0.5 million and not exceeding Y 3.0 million for the quality of their engineering and financial preparation and their overall feasibility. Within the mandatory review limits, procurement of project related works will not commence prior to successful PPO appraisal [Implementation Covenants];

(j) provincial AWPs for the following year will be prepared and submitted to the NPO for review and approval no later than October 15 of each year; [Dated Covenants]

(k) for all water systems with total investment above Y 0.5 million, the county quality assurance office will be retained to verify that construction practices and standards have met design specifications [Implementation Covenants]; and

(l) commencing not later than the second full fiscal year of operations of such investment, water charges will be established and collected annually at a level sufficient to cover operations and maintenance costs, administrative costs, taxes, and the greater of (i) interest charges and depreciation, or (ii) debt service requirements (interest plus principle repayment). [Operating Revenue Covenant]

H. Readiness for Implementation

☒ 1. a) The engineering design documents for the first year's activities are complete and ready for the start of project implementation.

☐ 1. b) Not applicable.

☒ 2. The procurement documents for the first year's activities are complete and ready for the start of project implementation.
☒ 3. The Project Implementation Plan has been appraised and found to be realistic and of satisfactory quality.
☐ 4. The following items are lacking and are discussed under loan conditions (Section G):

Note: Re: 1.a) and 2. above. Engineering designs for the first year will be completed by May 1999, with civil works bid documents being completed during the remainder of 1999 to ensure construction starts in early 2000, which is the first year of construction.

I. Compliance with Bank Policies

☒ 1. This project complies with all applicable Bank policies.
☐ 2. The following exceptions to Bank policies are recommended for approval. The project complies with all other applicable Bank policies.

George N. Plant	Keshav Varma	Yukon Huang
Team Leader	**Sector Manager/Director**	**Country Manager/Director**

Annex 1: Project Design Summary

CHINA: Fourth Rural Water Supply and Sanitation Project

Hierarchy of Objectives	Key Performance Indicators	Monitoring & Evaluation	Critical Assumptions
Sector-related CAS Goal: Human development: poverty reduction.	**Sector Indicators:** Increased incomes and improved health conditions nationally.	**Sector/ country reports:** Annual figures published by the State Statistical Bureau, Ministry of Public Health, Provincial Health Bureau, and Provincial Governments.	**(from Goal to Bank Mission)** Government's commitment is sustained.
Project Development Objective: Reduce the time and cost for people in poor rural areas to obtain clean, safe water supply, while improving related sanitation and health behaviours through education and pilot investments.	**Outcome / Impact Indicators:** Number of villagers served by project-supplied water meeting national rural water quality standards. Number of sanitary latrines constructed in villages in the project counties in addition to those constructed under the project, and the precentage point improvement in key water-related health behaviours. [Note: No specific indicators are given for time and cost savings because (a) the exercise of precisely quantifying these savings is expensive and (b) this exercise would provide little additional information additional to that from financial performance. The financial covenant performance, through demonstrated willingness to pay, reflects villagers' own perception of time and cost savings. Time and cost-related questions are included in the baseline survey.]	**Project reports:** Figures provided by the National Project Office, Provincial Project Office, and County Project Offices. Baseline survey and Progress reports.	**(from Objective to Goal)** Increased convenience from sub-project systems saves labor which is diverted to other more productive activities. Government efforts to control pollution and diseases are sustained.
Output from each component:	**Output Indicators:**	**Project reports:**	**(from Outputs to Objective)**

Safe, conveniently-located water to 3.1 million people in 27 counties.	Number of people newly served with safe water.	Progress reports from National and Provincial Project Offices.	Technical and environmental risks are minimized. Water sources show no sign of deterioration.
Sustainable investments in water systems.	Percentage of water systems meeting the tariff covenant by the second full fiscal year of operation.	Operational reports from the National and Provincial Project Offices.	Unforeseen costs do not arise over time from other sources. Proper financial management of systems.
Increased adoption of safe water-related health, hygiene, and sanitation practices.	Improvements in the percentage of people practicing key water-related behaviors. Number of villagers using their own resources to construct additional sanitary latrines.	Baseline surveys. Progress reports from National and Provincial Project Offices.	Project is replicated across households. Eventually, more villagers are willing and able to pay to install safe latrines in their own households. Successful diffusion of improved behavioral practices across individuals and villages.
Project Components / Sub-components:	**Inputs: (budget for each component)**	**Project reports:**	**(from Components to Outputs)**
Water supply, including piped (household connections and community standpipes) and non-piped (handpumps and rain catchments) systems	US$74.2 million to 3.1 million people in 27 counties in 4 provinces.	Project office progress reports, disbursement reports, required Annual Work Plans including design and financial feasibility studies, and Bank supervision missions.	Local and provincial governments meet counterpart funding commitments; beneficiaries are able to pay 25 percent upfront contribution. Local price bureaus and other agencies cooperate to establish appropriate tariff levels to ensure financial sustainability of new water systems.
Sanitation and health education.	US$7.3 million	Project office progress reports and Bank supervision missions.	Targeted health education programs stress hygienic water-related practices and water source protection; sanitation investments reduce pathogen loads. Baseline surveys target appropriate areas of health behavior. Increased education induces behavioral change.

Project management	US$4.9 million	Project office progress reports, disbursement reports, and Bank supervision missions.	Project offices are fully staffed and funded. Training programs and consultant input are utilized to address specific problems such as procurement and design work.

Annex 2: Project Description
CHINA: Fourth Rural Water Supply and Sanitation Project

By Component:

Project Component 1 - US$74.2 million

The Water Supply Component

The water supply component will give villagers in all 27 counties the opportunity to invest in improved water supplies. No constraints are set on the type of system chosen, which can range from the household-specific solutions of rainwater collectors or shallow or deep-well hand pumps, to single- or multivillage community piped systems. Households can choose whether to invest in individual household connections or to rely on community standposts.

Piped Water Supply Systems. Piped water supply systems will serve over 99 percent of the approximately 3.1 million project beneficiaries. According to the government's preliminary estimates, a total of 479 water facilities will be constructed, of which 454 are planned to provide direct household connections. The continuing shift from hand pumps to piped systems with household connections that has been occurring since the first rural water supply project reflects both consumer demand for the convenience and status afforded by individual household water taps and their willingness to pay up front the additional costs. Spring water sources are the most cost-effective because the water is usually of good quality and no treatment, apart from disinfection, is necessary. Often, spring systems can be gravity-fed, removing the need for storage tanks and pumps. Surface water systems are usually the most costly because water treatment is required, as is pumping to storage tanks to maintain system pressure. The majority of the proposed systems (70.6 percent) are medium-scale (Y 0.5 million to Y 3 million). Of the remainder, 27.4 percent of the systems are small-scale (less than Y 0.5 million investment), while only 2.1 percent are large-scale (over Y 3 million). In the first-year program, 43 piped systems are proposed for construction, after which 357,400 rural residents would have access to safe drinking water.

Non-piped Water Supply Systems. The proposed project also contains a limited number of alternative low-cost water supply technologies (point sources) to serve communities where population is sparse and/or ground and surface water is scarce. According to the government's preliminary estimates, the proposed project would construct 120 household rainwater collectors and 173 deep-well hand pumps. These systems would collectively serve 30,213 rural residents, or slightly less than one percent of the total beneficiaries. Rainwater collectors are planned for the mountainous regions of Guizhou Province, where rainfall is plentiful, but access to surface water is difficult. Deep-well hand pumps are planned for construction in Anhui and Hainan Provinces. Fujian Province does not plan to construct any non-piped systems. In the first-year program, 16 deep-well hand pumps will be constructed, serving 1,700 people.

Planning and Design Criteria. The piped water supply systems proposed in the project have been selected as the least-cost solutions. The criteria used in the design of the piped systems are based on the China Rural Water Supply Engineering, Planning, and Design Manual prepared by the Executive Office of the National Patriotic Health Campaign Committee. Per capita domestic water consumption is assumed to range between 40 to 80 liters per day depending on the sufficiency of the water sources and the climatic conditions. For animals and other uses, a consumption allowance of 10 liters per day is used. For non-piped systems 30 to 40 liters per capita per day are considered adequate design demands. A design period of 15 years is selected (10 for some of the smallest plants) and the annual population growth is taken

as 1.2 percent. A factor of 1.5 is used for maximum day demand and the peak hour demand factor applied varies from 2.5 to 4.0. The minimum system design pressure in the pipe network must be not less than 5 meters. Non-piped water supply systems use the design criteria specified in the China Rural Water Supply Engineering, Planning, and Design Manual.

Training. Training sessions will be conducted by the CPOs for water plant managers, operators, and accountants. Manuals for this training have already been prepared by the NPO, and will be disseminated through the CPOs.

Project Component 2 - US$7.3 million

The Sanitation and Health Education Component

This component seeks to help maximize the opportunities for reducing the incidence of waterborne disease in three ways: (a) make available information on improved latrine designs, their investment costs and economic and health benefits by sponsoring village information sessions about water supply, improved latrines, and related hygiene practices; (b) finance improved latrine facilities on a demonstration basis in project village schools and in one to three households in each project village; and (c) identify specific types of behavioral change that will improve health conditions, finance the preparation of health education materials and finance support to local health networks to expand and upgrade existing health education information programs in the project areas, increase local media coverage of health issues, make health educational materials accessible to more rural people, and train additional local health experts.

The component will comprise of the following:

Training. The NPO and CPOs will provide health education training to local leaders, including primary school teachers, village doctors, and Women's Federation representatives.

Health Education. The NPO will develop, and provincial and county project offices and local leaders will implement, an education information program that will emphasize the importance of behavioral change and the link between hygienic practice and improved health primarily to housewives, young women and school children. Development of education materials will be done with the assistance of agencies selected through a competitive process. The information program will be implemented in four phases: Phase I—awareness of project objectives; Phase II—awareness of environmental protection and sanitation promotion; Phase III—water utilization; and Phase IV—hygienic behavior. Phases I and II of the health information program would be implemented in project villages prior to the construction of water supply schemes in each village, and Phases III and IV during and after the construction period.

Construction of Three Household Composting Latrines. For those villagers willing and able to construct improved household latrines at their own expense, CPOs and county/municipal sanitary and epidemic prevention stations will provide technical assistance. Where villagers are able to contribute at least half the cost of an improved latrine in labor and materials, but not the full capital cost, the project will make a limited amount of funding available to each village to assist in purchasing inputs, for no more than three household latrines per village. The latter expenses will be covered either by beneficiaries, Bank financing or government grants. Only those households that are able to pay part of the cost of the latrine will be supported under this component, to avoid providing models that cannot be followed without subsidies.

Construction of Three to Five Village School Composting Latrines. In each project county, the CPO

will select three to five villages to receive public school composting latrines.

Schedule. The NPO will prepare materials for the first two phases of the health education component on the basis of existing information, in order to begin training-of-trainers for the first-year program no later than January 1, 1999. The health education information program for Phases I and II will be carried out in all first-year villages by the beginning of the construction season in April 2000. The NPO will use the findings of the baseline surveys to develop targeted, specific health education messages, and would prepare materials and begin to implement training for Phases III and IV of the health education information program by September 2000.

Project Component 3 - US$ 4.9 million

The Project Management Component

The project management component comprises (a) the establishment and maintenance of the county, province and national project offices; (b) technical assistance and training for project office personnel; (c) financing of project management and supervision activities; and (d) development and implementation of baseline surveys.

Establishment and Maintenance of Project Offices. The existing NPO, four PPOs, and 27 CPOs will operate during the implementation period of the project to carry out day-to-day project activities. The following physical assets will be required to support this work:

(a) **Office Space.** At the provincial and county levels, if new facilities are required, space will be rented, or provided free of charge if the project will be operating out of a government building; no dormitories will be funded under this project.

(b) **Warehouses.** At the county level, warehouses will be rented, or, if suitable facilities are not available, construction of adequate warehouses will be funded through the project. Warehouses will be financed by counterpart funds.

(c) **Vehicles and Office Equipment.** These items will be procured through the project if such equipment is not already available.

(d) **Operating Expenses.** These include communication, transportation and stationary costs to be funded by the project.

Technical Assistance and Training for Project Management Office Staff. The national, provincial and county project offices with a full complement of staff will employ approximately 500 persons to implement this project. To maximize their participation, training and technical assistance will be provided in the following areas:

(a) **Procurement.** Annual assistance by qualified procurement personnel will be provided to the NPO to improve preparation of ICB bidding documents. The CPOs and PPOs will receive ongoing procurement training from the NPO, particularly on procuring civil works contracts and on preparation of ICB bidding documents. There are approximately 53 procurement staff who will require this training.

(b) **Project Management.** Provincial and county project office directors and deputies will be trained by the NPO in human resource management, project scheduling, monitoring, evaluation, reporting, supervision, budgeting, and funds management. PPOs will have additional follow-up training sessions for the CPOs. Approximately 72 management staff will participate in these sessions.

(c) **Finance and Accounting.** The NPO will train all PPO and CPO financial project staff on the accounting system used to track project expenditures, maintenance of supporting documentation, preparation of financial reports, and processing of disbursement and Special Account reimbursement requests. PPOs and CPOs will also be trained in financial management aspects of water utilities and financial analysis of water supply system options. There are approximately 135 financial staff requiring this training. It is also desirable that county and provincial auditors attend this meeting to familiarize themselves.

(d) **Water Plant Engineering and Operations.** Approximately 95 project office engineering staff will require training in water plant site selection, hydrogeological surveying, construction management, water plant operations management and water quality monitoring. The NPO will design all training programs and carry out initial training, with follow-up training provided by the PPOs. Technical assistance from county and provincial design institutes to review and prepare some water facility engineering designs, as well as from construction supervision bureaus to supervise construction works will be required.

(e) **Sanitation and Health Education.** Approximately 89 personnel will require training in the design of health education programs, composting latrine designs, costs and benefits, and latrine construction supervision. The NPO will conduct the initial training, with follow-up training to be provided by the PPOs.

The costs include technical assistance and training-related organizational and administration costs incurred at the national, provincial and county levels.

Project Management and Supervision. Nearly 500 piped and 300 nonpiped water facilities will be constructed, and the project beneficiaries will receive training to improve their health and hygiene and sanitation practices. To oversee the successful implementation of these investments, the national, provincial and county project offices will need to spend the majority of their resources on design review, supervision of project implementation, and project monitoring, evaluation and reporting. These activities are summarized as follows:

(a) **Design Review.** To facilitate PPO assessment of CPO engineering and financial capabilities, each PPO is expected to conduct site review of each of the first three water supply system designs in each county, or the full county first-year work program, whichever is greater. In each subsequent year, the PPO will conduct site review of no fewer than 20 water supply systems per year, including all systems with estimated total costs above Y 500,000 and at least two systems below the mandatory review limit size. The reviews will include all engineering factors, as well as the financial analysis and counterpart funding plans. All mandatory reviews are expected to be carried out in the field. The NPO will conduct mandatory review of all systems with estimated total investment costs above Y 3 million and not fewer than 8 of the largest provincial systems in any given year, such review to occur in association with site visits and to be conducted by teams of financial analysts and engineers. Design review, travel and subsistence costs will be funded by the project.

(b) **Supervision.** This is comprised of on-site inspection of water plant construction and operation, latrine construction and health education training programs. PPOs should plan to visit all project villages at least once every year to review the status of project implementation, and CPOs will need to make frequent village visits depending on each village's stage of development. Where water plant size and complexity is beyond the scope of the CPO's experience, provincial construction supervisors should be engaged to perform that function. Supervision travel and subsistence costs will be funded by the project.

(c) **Monitoring, Evaluation, and Reporting.** These activities include conducting baseline surveys, monitoring performance indicators, and preparing quarterly performance reports and biannual project financial statements. Related travel and subsistence costs will be funded by the project.

(d) **Development and Implementation of Baseline Surveys.** The NPO will oversee, and CPOs will conduct, baseline surveys in project villages, to provide a basis for future monitoring and evaluation. The baseline survey will cover 15 percent of the villages in each of the 27 project counties over the course of three years; in each village, a primary school (Grade 4) class and 10 housewives between the ages of 20 and 45 will be surveyed. The survey will cover basic information on population, gross income level and sources, coverage of different water systems and latrine types, time and distance traveled to collect water, the incidence of water-related diseases, health education activities and coverage of villagers and school children, and percentage of rural residents washing their hands before meals and after using the toilet, and drinking boiled water. A copy of the format of the survey is included in the Project Implementation Plan. The field work for the baseline survey will be carried out by CPO staff, beginning no later than October 1, 1999. The final report for the baseline survey will be prepared by the NPO and submitted to the Bank for review by January 1, 2000. Resurveys will be conducted after the fourth year of the

project, or more frequently as needed.

Financing Arrangements for Project Management Costs. The project office budgets will include the costs of leasing office and storage space (storage space may be constructed at the county level if suitable space is not available for rent), supervision expenses, office staff training expenses, transportation to project sites, and contracting for construction supervision or other outside services; office staff salaries are not included in the budgets. The IBRD loan / IDA credit will be used to fund a portion of the vehicles and office equipment, and technical assistance and training costs. Transportation, travel expenses, and office operating expenses will be funded by county governments. The NPO, PPO and CPO costs will be borne by county-level counterpart funding annually in amounts proportional to each county's project investment costs. It is the responsibility of the county government to repay any credit proceeds used to finance project office assets. Some counties pass on all or part of these costs to beneficiaries through the local water tariffs.

LIST OF PROVINCES AND COUNTIES

Anhui Province

1. Qianshan County
2. Guichi County
3. Yingshang County
4. Linquan County
5. Qingyang County
6. Wuhe County
7. Wuwei County
8. Lujiang County

Hainan Province

9. Ding'an County
10. Tunchang County
11. Changjiang County
12. Lingao County
13. Ledong Li Nationality Autonomous County
14. Lingshui Li Nationality Autonomous County

Guizhou Province

15. Jinsha County
16. Kaiyang County
17. Nayong County
18. Xiuwen County
19. Zheng'an County
20. Qianxi County
21. Bijie County
22. Xifeng County
23. Weining County

Fujian Province

24. Changting County
25. Pingtan County
26. Liancheng County
27. Pinghe County

Annex 3: Estimated Project Costs

CHINA: Fourth Rural Water Supply and Sanitation Project

Project Cost By Component	Local US $million	Foreign US $million	Total US $million
Water Supply	38.5	22.4	60.9
Health, Education and Sanitation	5.1	1.0	6.1
Project Management	3.9	0.2	4.1
Total Baseline Cost	47.5	23.6	71.1
Physical Contingencies	7.1	3.5	10.6
Price Contingencies	2.8	1.9	4.7
Total Project Costs	57.4	29.0	86.4
Interest during construction		5.4	5.4
Front-end fee		0.2	0.2
Total Financing Required	57.4	34.6	92.0

Project Cost By Category	Local US $million	Foreign US $million	Total US $million
Goods	10.2	28.9	39.1
Works	37.6	0.0	37.6
Services	0.5	0.0	0.5
Training	3.5	0.1	3.6
Other	5.6	0.0	5.6
Total Project Costs	57.4	29.0	86.4
Interest during construction		5.4	5.4
Front-end fee		0.2	0.2
Total Financing Required	57.4	34.6	92.0

Other includes: Land Acquisition under the Water Supply component ($3.6 mil.) and Project Management and Supervision under the Project Management component ($2.0 mil.).

Interest During Construction is based on: (i) onlending rates for projected disbursements of loan proceeds; (ii) payment of commitment charges; and (iii) service charges for projected disbursements of credit proceeds.

Annex 4

CHINA: Fourth Rural Water Supply and Sanitation Project

ECONOMIC ANALYSIS

Water Supply

1. The project will benefit an estimated 3.1 million rural people in 27 poor counties. Ideally, participating villages would be chosen by evaluating NPV generated by water investments, including public health, social welfare, or other externalities, and choosing that set of investments that maximized the surplus value across all villages. However, generating such information over the nearly 500 piped water and 300 non-piped systems proposed would be excessively costly, if even possible to an acceptable level of uncertainty. As an alternative, villages are 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 investments are justified in terms of private demand. A very wide array of villages would meet such a test, including those that are relatively well off, yet still unserved by safe water. In practice, counties select villages based on an initial assessment of the cost of supplying water and whether the likely village demand would meet those costs. If they feel a particular village might be eligible to participate, they offer the opportunity and the village makes its own assessment of services, costs, and willingness to pay. When a village elects to participate, a feasibility study is done that more carefully fixes service levels and costs, and villagers have a second opportunity to opt out of, or attempt to modify the terms of, participation. The village selection technique biases selection toward better-off villages in the county. However, given that the highest income villages in the project counties already have piped water systems (on average, 18 percent of the villages already have such service), and that the credit will provide an additional 21 percent of villages with safe water, mainly through piped systems, the benefiting villages should include primarily villages grouped close to the county mean income level.

2. The actual NPV of the investment will vary from system to system, depending on actual villager WTP, public health and social welfare externalities, and system economic costs. In none of the villages visited was water marketed by private vendors, nor was such marketing reported for other villages. This comparator for direct valuation of water is therefore unavailable. In the absence of such a market, the use of a financial covenant for the water supply investment does set a base economic rate of return (ERR). The covenant requires that tariffs cover all operations and maintenance costs and the greater of depreciation or debt service. Chinese regulations require a depreciation rate of 3.5 percent. The onlending rate to be passed down by the Ministry of Finance is expected to be approximately 3 percent, with a 17-year maturity, so debt service will exceed depreciation for those years. Given that the standard conversion factor for China is 1.0, major equipment and materials inputs are acquired through ICB, and no major domestic input has an economic price above its financial price, a simple calculation shows that if the covenant is met, the lower-bound ERR will be at least 3 percent. The actual rate will be higher in all cases as the calculation does not incorporate consumer surplus, nor does it reflect the fact that the actual tariff will be set on a cost structure that includes the 17 percent VAT and other taxes and duties, as well as incorporating a return to government capital contributions in many counties. The government choice to direct scarce international resources to these villages gives evidence of significant positive public health or social welfare externalities additional to the private value of increased water supply.

3. The covenanted tariffs yield positive lower-bound ERRs, but do not match the established discount rate of 12 percent for Bank Group projects in China. The relative contribution of consumer surplus therefore becomes a key issue for economic evaluation. The demand curve for the improved supply

depends very much on the original supply, which typically remains available. In almost all cases, some substitution of sources is possible. For the more common bacterial and viral contamination, boiling for sufficiently long periods can negate the problem and the trade-off between old supply and new becomes one of the cost of fuel and time. These issues are stressed here because in some very low-income villages under RWSS, demand for improved water has not met expectations, with consequent reductions in economic returns. Those cases are characterized by convenient, if unsafe, existing supply. There, villagers have maintained or even increased overall consumption of water, but used the high-quality source only for drinking and cooking. In those cases, at water tariffs above Y 1.5/m3, the new source may supply only 10 to 15 liters/capita/day (lcd) of a total consumption exceeding 60 lcd.

4. The above discussion referred to substitution based on quality. A second source of difference is water source location. Here, circumstances vary greatly across project counties. In some counties in Hainan, Fujian, and Guizhou, for example, surface or shallow well-water sources tend to be convenient for all households, with no more than a five-minute walk to a source in all seasons of the year. There, the problems are mainly those of water quality. In other project counties, however, access to raw water, even with existing wells, can be highly seasonal. During the rainy season, water, often of good quality, will be conveniently located. But during the dry season, and particularly in drought years, 40 minute or longer round trips for water are not uncommon. In these locations, then, the demand for improved water varies with the season. Demand for improved supplies will be highly inelastic during the dry season, but very elastic during the rainy season. Economic returns to new supply likewise vary across seasons.

5. Because convenience—the time required to obtain water from a particular source —is a major determinant of demand for improved supply, and because the impact on private demand is much more readily analyzed than are other contributors to that demand, this analysis will focus on the time variable. The methodology for calculating the cost of time is well developed and that used here is based on the discussion in "The Value of Time In Economic Evaluation of Transport Projects: Lessons from Recent Research" (World Bank, Infrastructure Notes, OT-5, 1997). In this formulation, household income is used to calculate the value of time used in pursuits that do not yield monetary income. For illustrative purposes, three project counties are used to show the implications of income levels for the cost of water collected from unimproved sources (Table 1). The three serve as representatives of counties whose average annual net rural per capita income fall in the lower, middle, and upper ranges of the 27 project counties (see Table 2). The table has been constructed assuming very conservative values whenever a choice needed to be made. For water gathering time, only 7.5 minutes per round trip is assumed for surface sources. With household wells, that is reduced to 4 minutes per round trip. Note that collection time from an improved yard tap will not differ much from a household well, the difference coming in the time needed to lift out a pail of water from a well, or pump out the same volume using a hand pump. One important factor not reflected in the table is the effort connected with the time spent. Clearly, the effort of filling a pail by turning a spigot is much less than lifting water from a well, even if the time needed for both is approximately the same. Any adjustment to the cost for the effort of gathering water from the unimproved source would serve to increase that cost.

Table 1: Cost of Water

	Guizhou Nayong County	Anhui Qianshan County	Fujian Pinghe County
Annual per capita income (Y)	950	1,358	2,502
Average household size	4.3	4.1	4.2
Laborers per household	2.2	2.2	1.8
Annual household income (Y)	4,094	5,568	10,508
Assumed hours of work per year	7,260	7,260	5,940
Average income per hour (Y)	0.56	0.77	1.77
Daily water gathering time in hours, 4 trips/40 liters each (surface source)	0.5	0.5	0.5
Daily water gathering time in hours, 4 trips/40 liters each (household well)	0.2	0.2	0.2
Current labor cost/m3 (surface)	1.75	2.40	5.53
Current labor cost/m3 (household well)	0.70	0.96	2.21
Approximate cost/m3 of project safe water	1.5	0.9	1.5

Note: Water is typically collected using two 20-liter pails on a shoulder pole, so each trip collects 40 liters.

Table 2: Distribution of Project Counties' Annual Net Rural Per Capita Income

Average Annual Net Rural Per Capita Income	Number of Counties
Y 950 – 1,200	8
Y 1,201 – 1,400	7
Y 1,401 – 1,800	6
Over Y 1,800	6

6. The conclusion from the table is straightforward: a family currently served by a household well supplying water that will be safe after boiling will have little financial incentive to use improved water supplies if time is the only factor. Either source is likely to be boiled, given the Chinese preference for

taking drinking water in the form of tea. Only for counties in the higher income range does usage of piped supply provide cost savings. However, the cost of collecting water quickly exceeds the tariff for piped supply once the family must rely on sources outside their own compound. Even with a round trip of 7.5 minutes, families at the average income of the lowest income county are indifferent between purchased and collected supply. For counties in the middle and higher income ranges, improved supply becomes a very attractive alternative to gathering water outside of the household compound. Where raw water sources cannot be easily treated to yield drinking water, families will readily carry drinking water over 20-minute round trips, indicating a value for that water of at least Y 2.0/m3, even for the poorer families.

7. The analysis accords well with observed village participation in earlier projects. No database has been assembled for those projects that can be used to characterize villages by their density of reliable household wells. However, Bank supervision teams have now visited well over one hundred villages either participating in or proposed for participation in the Bank-financed rural water projects. In no supervision case has a village with reliable household wells chosen to participate. Rather, participating villages regularly or seasonally face a substantial time burden for water gathering, or, more rarely, have current supply with arsenic or fluoride levels so high as to damage health. The same pattern of participation is expected in this project and consistently generates rates of return well above the 3 percent financial floor.

8. The relative contribution of consumer surplus to the total private value of improved supply will determine the private ERR and NPV. The information in the above table also helps address this question. First, recall that when villagers choose whether to participate in the project, they know the approximate tariff levels. Villagers choosing to participate thus face costs for at least part of their supply that are as great as the projected tariff. These costs often include recapture of government capital contributions, plus taxes and other fees on inputs, hence yield ERRs above the 3 percent covenant level. However, assuming the worst case, that the tariff represents only a 3 percent lower bound for the ERR and that no real income increases are expected over the project life, the consumer surplus would have to increase total value by 38 percent over that captured in the tariff for the project to enjoy a positive NPV for the private demand (any positive externalities to, say, public health, would further increase NPV). Any increase in real incomes over the project life would shift the demand curve (given the positive income elasticity of water demand shown in other China projects) to the right and further increase the consumer surplus. Based on the water collection time cost in the above table, in the better off among the poor counties (examples shown for cases in Anhui and Fujian), for villages without reliable household supply, water costs are cut by more than half and consumer surplus will therefore easily exceed the 38 percent level. The Guizhou case is less clear. Under the most conservative assumption about the demand curve, and assuming that villagers attribute value only to time savings, the additional consumer surplus would increase total benefits only 17 percent, yielding an ERR of about 8 percent. Although the project clearly faces the risk that villages with positive ERRs but negative NPVs will elect to participate, this risk arises only with the poorest participating villages when they already enjoy supply within an average 7.5 minute roundtrip from the household. Supervision experience suggests that the poorest villages typically suffer the longest, not the shortest, distance from reliable supply, hence the risk is deemed manageable. For the higher-income poor counties, even a 7.5-minute round trip justifies project participation.

9. **Sensitivity Analysis.** Given that nearly 500 piped systems will be constructed under the project, a wide array of actual ERRs is anticipated. The economic test is to realize a positive NPV, not maximize that NPV over the project. As the time value chart shows, maximizing private NPV would generally involve selecting higher-income villages in preference to lower-income as project beneficiaries. This selection bias against serving the poor occurs in any project in which time value plays a crucial role in determining returns. Indeed, to overcome this problem in transport projects, the "Infrastructure Note" cited above recommends using average national time values, rather than location-specific values, to avoid biasing

road investments toward wealthier areas. That works as a political selection mechanism, but is not defensible in terms of ERR or NPV calculations. In this project, the tariff provides a self-selection mechanism that guards against projects with negative NPVs. As the time value calculations show, economic returns from projects meeting the tariff covenant have a very high probability of yielding a positive NPV. Indeed, where existing water sources are distant or untreatable to safe standards, the ERR will be well above 12 percent and the NPV well above zero.

10. The argument in the foregoing paragraph relies on accurate forecasting of demand at each village, so that the consumers use, and pay for, sufficient water to actually cover the enumerated costs. Experience in the previous projects makes it clear that designers usually correctly estimate use rates. However, some counties have shown a tendency to design for and construct excess supply, on the theory that economic growth, hence incomes and commercial and industrial demand, will proceed at a rapid pace. This issue therefore was the subject of considerable scrutiny during the appraisal process. The appraisal mission deemed the best proxy for system demand to be demand for similar systems in adjoining areas within a county. Where such evidence could not be found, or comparable systems had markedly lower tariffs, CPOs have been asked to undertake additional analysis to justify their choices.

11. A second requirement if the willingness to pay the financial tariff is to capture economic value is that the villagers perceive that they will be required to repay the loan on schedule. If, instead, they believe that the loan contract is unenforceable, the project would face a familiar moral hazard through villagers signaling a willingness to pay for a higher level service than they are actually willing to fully pay for. The first rural water supply project has not experienced this problem, while the second is just entering the repayment period and thus provides scant evidence. That said, the concern is not simply hypothetical, given the widespread publicity in China about SOE failure to repay loans and the lack of effective sanctions on them.

Sanitation and Health Education

12. The value of safe water supplies can be negated by a failure to follow good health and sanitation practices. For example, food preparers who have not washed their hands can easily contaminate the water after it leaves the tap. Unfortunately, while affordable physical investments can solve many of the water quality problems, the behavioral change needed for good health and sanitation practices is much harder to induce. For decades, the Chinese NPHCC has run health education and action campaigns targeting a broad array of rural health problems. They achieved early successes that included reduction of schistosomiasis and insect-borne diseases, both cases where disease vectors were easy for rural people to identify. NPHCC has also worked on a number of important sanitation interventions, including boiling water; latrine use, particularly composting latrines that promise high rates of pathogen destruction; and hand washing. They report success in spreading knowledge of good practice, and Bank preparation and supervision missions have rarely met an adult who hadn't heard of the importance of boiling water. However, in many poor villages those same adults report frequent consumption of unboiled water, especially in the summer and by young children.

13. Latrine use rates are high, at over 90 percent, reflecting an ancient concern with capturing fecal material to fertilize crops. A total of 57 percent of rural households have composting latrines; their coverage has grown rapidly in recent years. Not surprisingly, Chinese surveys have consistently shown a high correlation between handling untreated fecal material and intestinal and other illness. For the last three decades, government has worked to identify treatment methods that substantially reduce pathogen transmission. A number of latrine designs, when properly used, have been shown to massively reduce the number of pathogens. However, compared to the simple traditional designs, such latrines require

purchased inputs and unfamiliar construction techniques. Cost, which can easily amount to a year's per capita income in poor villages, and the lack of a proven health benefit have slowed adoption.

14. Unlike water supply under the RWSS project, the WTP for improved sanitation under RWSS has been well below the private cost of latrine construction. Even in villages with high subsidies for the construction of private composting latrines, uptake rates have been low. This correlates with national and international experience with improved sanitation—everywhere the private demand for sanitation substantially lags that for improved water supply. Were this project to seek rapid advance in installing improved latrines, project design would need to be bimodal, in the sense of working with relatively wealthy counties on the sanitation issue, for that is where sanitation WTP will be highest. However, experience under RWSS suggests that such an approach would over stretch the administrative capacity of provincial project offices and the disconnect between the water and sanitation issues would hinder overall implementation. Instead, the project will have lower expectations of sanitation than of water supply, proceeding in a cautious and experimental manner toward expanded use.

15. In the context of preparing this project, a viable benefit estimation procedure for the sanitation and health education components has not been identified. The methodology is certainly known, but involves sophisticated epidemiological work for which the needed data are not at hand and for which the cost cannot be justified. In the absence of such a test, the project seeks to lower the cost of improved sanitation through the provision of technical assistance in design and to increase private demand through demonstrating the technology to villagers. Even in the absence of an adequate rationale for subsidizing private sanitation facilities, such a rationale does exist for improved school latrines. School health education courses, which have demonstrated a substantial positive impact on health, lose effectiveness if taught in an environment where students cannot practice the skills they are being taught. Quite apart from the project concerns, inadequate sanitary facilities are also known to discourage school attendance by girls of some age groups or ethnicity.

16. The project will begin to overcome, however modestly, the gap in NPHCC's knowledge of the impact of their work. The baseline studies financed by the project will, for the first time, permit direct and systematic estimation of project impacts. The studies provide the basis for adapting program content to results over and past the life of this project.

Typical Costs

17. Water supply costs vary depending on the available sources of raw water, their location relative to the served village(s), and treatment levels needed to assure safe supply. Those costs are village-specific. But costs also vary with the choice of delivery level (standpipes, household connections, continuous or intermittent supply). Those costs are household-specific. Where villages elect to build systems allowing household connections, households have the option of seeking household connections or not. Those that elect such connections in the first year of project construction will have part of those costs eligible for financing under the loan/credit. Households electing to connect in later years will bear the full direct cost of such connections.

18. The feasibility studies on first-year proposed systems yielded estimated operations costs and projected tariffs. The system cost estimates for the first-year construction program are based on accurate bills of quantity. The inputs are all locally available, hence prices are reliably known. Furthermore, the projections can be validated against costs experienced in the ongoing NRWS project. Based on the

feasibility studies, the project shows the following range of costs per cubic meter of delivered water:

Table 3. Distribution of Expected Tariffs by Province

Province	Piped supply (Y/m3)
Anhui	0.65-1.30
Fujian	0.52-1.80
Guizhou	1.50-2.80
Hainan	0.70-1.22

19. These figures are comparable to those under NRWS. Urban residents typically pay much less for a more reliable water supply, with rates ranging from about Y 0.4/m3 to Y 0.8/m3. Lower urban prices have two main causes. First, their water pricing is based on the depreciated, historical value of capital and many of the systems are at least a decade old. Second, urban governments have traditionally subsidized many of the investment costs, which were then not used in the price basis for the system.

Poverty Analysis

20. The beneficiaries under the project are located within some of China's poorest communities. Accordingly, offering low-cost water supply options and a means of financing them through the water tariffs are key to the affordability of these systems. Beyond this, communities selected for inclusion in the project must demonstrate the willingness and ability to pay for safe and convenient water supplies by collecting beneficiary investment contributions prior to commencement of construction. In the selection of project counties, local per capita income information was analyzed. The anticipated water tariffs were then compared against the average income figures, which range from Y 950 to Y 2,787 per capita per year. In the highest case, annualized water fees are expected to represent 5.7 percent of beneficiary income, and in most cases less than 3 percent. Asset holdings are unknown and the burden of making the capital contribution difficult to analyze. Here, though, the willingness to contribute is immediately tested and found to be high. In the ongoing NRWS project, beneficiaries have continually shown a willingness to pay the cost of their water supply.

21. Preliminary estimates suggest the following levels of tariff as a percentage of villager income:

Table 4. Water Costs as a Percentage of Villager Income, Distribution Range by Province

Province	Estimated percentage of villager income needed to purchase water at estimated use levels of the new system (lowest and highest county)
Anhui	1.2 - 2.3
Fujian	0.5 - 1.8
Guizhou	2.1 - 5.7
Hainan	1.3 - 2.5

22. A critical affordability issue is not average affordability, but rather affordability by the poorer members of the village population. The poorest villagers will have insufficient cash income to contribute capital during the construction phase or pay tariffs during implementation. Some substitution of labor and materials for capital is possible, but studies show that the poorest are often so because they are too incapacitated to join fully in the working life of the village. In every village interview addressing this issue, village leaders noted the existence of such households (indeed, the formal rural social welfare system is structured around identified poor households). These households are termed "five guarantee households," are primarily found among the childless elderly, and consistently numbered no more than 1 percent of the population in villages visited by the preappraisal mission. Fellow villagers are legally obliged to provide these households with a stipulated array of subsistence support, and village leaders consistently reported that the village would ensure access to safe water on behalf of the poorest village members. In some cases, the village welfare fund will cover the costs of the poorest. In others, common use, unmetered standpipes will be part of the system and accessible to all village members. While such households are unlikely to be offered household connections at communal expense, basic availability of safe water will be ensured.

23. Perhaps those at greatest risk will be those households that have incomes just above the level needed for special village poverty status. Such households will be able to control their own metered consumption, whether at household tap or standpipe, but most villages plan to assess the capital contribution on a per capita basis rather than an estimated use basis. Families with low per capita use will therefore effectively subsidize those with higher use levels. However, as with other project issues, experience under the previous projects provides good guidance on this issue. Under those projects, access by the poorer villagers has not been a serious problem, so it is unlikely to be so under this one.

Annex 5: Financial Summary

CHINA: Fourth Rural Water Supply and Sanitation Project

Years Ending
2005

	IMPLEMENTATION PERIOD						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total Financing Required							
Project Costs							
Investment Costs	9.9	22.8	25.9	19.6	8.2	0.0	0.0
Recurrent Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Project Costs	9.9	22.8	25.9	19.6	8.2	0.0	0.0
Interest during construction	0.1	0.7	1.2	1.6	1.8	0.0	0.0
Front-end fee	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Financing	10.2	23.5	27.1	21.2	10.0	0.0	0.0
Financing							
IBRD/IDA	9.1	10.6	10.9	8.7	6.7	0.0	0.0
Government	0.6	6.5	8.1	6.2	1.7	0.0	0.0
Central	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Provincial	0.6	6.5	8.1	6.2	1.7	0.0	0.0
Co-financiers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
User Fees/Beneficiaries	0.6	6.5	8.1	6.2	1.7	0.0	0.0
Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Project Financing	10.2	23.5	27.1	21.2	10.0	0.0	0.0

	OPERATIONAL PERIOD						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total Financing Required							
Project Costs							
Investment Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recurrent Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Project Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest during construction	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Front-end fee	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Financing	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financing							
IBRD/IDA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Government	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Provincial	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Co-financiers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
User Fees/Beneficiaries	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Project Financing	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Main assumptions:
Figures for Year 1 include those for 1999 and 2000.
Figures listed under Provincial Government also include financing from Prefectural, County, Township and/or Local Governments.
Figures may not add up properly due to rounding.

Annex 6: Procurement and Disbursement Arrangements
CHINA: Fourth Rural Water Supply and Sanitation Project

Procurement

Procurement of works and goods will follow the Bank's Guidelines - Procurement under IBRD Loans and IDA Credits dated January 1995 and revised January and August 1996, September 1997, and January 1999. Chinese Model Bidding Documents (including prequalification and bid evaluation documents), published by Tsinghua University Press, dated May 1997 and which are acceptable to the Bank, or the Bank's Standard Bidding Documents, will be used for all Bank-financed procurement. A Procurement Plan, providing a timeline for each step of the procurement process, is included in the PIP, to be updated annually.

All consultancy services financed by the Bank will be based on the Guidelines for Selection and Employment of Consultants by World Bank Borrowers, issued in January 1997 and revised September 1997 and January 1999. Normally the Quality- and Cost-Based Selection (QCBS) method will be used for the selection of consulting firms. Consultancy services estimated to cost less than $100,000 per contract may be selected using one of three methods: (a) selection based on consultants' qualifications; (b) single source selection; and (c) individual consultants. Services in which selection based on consultants' qualifications is used and which are estimated to cost less than $100,000 equivalent per contract shall be procured in accordance with the provisions of paragraphs 3.1 and 3.7 of the Consultant Guidelines. Services in which single source selection is used and which are estimated to cost less than $100,000 equivalent per contract may, with the Bank's prior agreement, be procured in accordance with the provisions of paragraphs 3.8 through 3.11 of the Consultant Guidelines. Services for the study of procurement document review which meet the requirements set forth in paragraph 5.01 of the Consultant Guidelines shall be procured under contracts awarded to individual consultants in accordance with the provisions of paragraphs 5.1 through 5.3 of the Consultant Guidelines.

All ICB procurement will be organized through the China National Chemical Construction Company International Tendering Company (CNCCCITC), which has been contracted by the NPO to carry out that work. CNCCCITC is an experienced and competent procurement agent with recent and relevant experience in international competitive bidding on Bank/IDA-financed projects. All other procurement will be conducted by the project offices. Intensive, continuous procurement training financed under the project will help these offices maintain their quality and expertise. The tender documents to be used in the project will be based on the model bid documents prepared by MOF and approved by the World Bank Group. All civil works are expected to have a value well below $10 million; therefore no ICB procurement of civil works is anticipated. Contracts for equipment and materials shall be grouped into packages estimated to cost the equivalent of $200,000 or more each, to attract maximum international competition. Table A summarizes the procurement categories and the expected procurement methods. The contract packages and method of procurement have been agreed with the NPO.

Procurement methods (Table A)

Civil Works. The total value of civil works is estimated at $41.1 million. These include water supply facilities (wells, pumphouses, treatment facilities, distribution systems, offices, latrines, and storage areas), latrines under the sanitation component, and some county warehouses (where suitable rental facilities are not available). Because even the largest systems would have total investments below $1 million, with most systems below $200,000, and because of their dispersed locations, all civil works will be contracted by

national competitive bidding (NCB), national shopping or force account. Of the total $37.6 million for civil works, it is expected that $12.2 million will be procured under NCB. Contracts with estimated values above $400,000 will be contracted by the PPOs following the NCB procedures promulgated by the government that have been reviewed and approved by the World Bank Group. Interested foreign bidders will be allowed to bid for NCB contracts. For contracts with estimated values below $400,000 (i.e. for the procurement of small works), project offices may use national shopping as an alternative to NCB. In national shopping, the project office uses clear, uniform written specifications, including delivery terms and conditions, to obtain bids from at least three qualified contractors. For contracts with estimated values at or above $100,000, the PPO conducts the shopping and qualified bidders must be from at least two different counties. For contracts with estimated values below $100,000, the CPO may conduct the procurement. National shopping can be used for contracts up to an aggregate value of $25 million. Included in this amount, force account may be used to procure civil works valued at or below $20,000 in areas where there is no adequately qualified or interested contractor. The aggregate value of force account procurement shall not exceed $4 million. Usage of force account for the procurement of civil works is subject to the Bank's prior agreement.

Equipment and Materials. Procurement of major items of equipment and materials—pipes, steel and pumps, along with audiovisual training equipment and utility vehicles—amounting to about $39.1 million will be through ICB, managed by the NPO on behalf of the project provinces. CNCCCITC will act as the procurement agency. Qualified domestic suppliers will be eligible for a preference in bid evaluation of 15 percent or the prevailing rate of customs duties and import taxes payable by a nonexempt importer, whichever is less. That equipment and materials will be procured through annual procurement actions. Additionally, the project will procure printed and audiovisual sanitation and health education materials, with each package valued under $100,000. These materials will be procured through national shopping, up to a maximum of $500,000. No NCB equipment and materials procurement is anticipated. Any needed equipment and materials not procured through ICB or national shopping will be procured as part of the appropriate civil works contract.

Technical Assistance. An estimated $3.6 million will be devoted to technical assistance and training. The project requires a baseline survey and resurveys to establish project impacts. These surveys have an estimated cost of $0.2 million. The project also relies on an extensive training program to ensure efficient implementation, with an estimated cost of $3.4 million. The Bank has worked with the borrower to establish both total costs and unit costs for the survey and training activities. Within the unit costs, the Bank has identified incremental costs of different types of surveys and training, defined as the direct costs of the activity, net of government employee salaries and institutional overheads. These incremental costs average 90 percent of total costs. The Bank would disburse against 100 percent of the eligible incremental costs. Eligibility would be established through Bank no-objection to the detailed survey and training plans, as these are developed and reflected in the annual work program.

Prior review thresholds (Table B)

All equipment and materials ICB packages (about 5 contracts, 100 percent of equipment and materials) would be subject to the Bank's prior review, including notice of invitation to bid, bid documents, bid evaluation and contracts. Project civil works will include some 479 piped systems with an average civil works contract value of about $130,000, 147 deep-well hand pumps with an average value of under $2,600, and 120 rainwater collectors, with an average value below $200. For civil works contracts, the first piped system contract from each project county (27 contracts), and thereafter approximately 10 randomly designated contracts per year, will be subject to the Bank's prior review. Also, the first NCB contact from each project county will be subject to the Bank's prior review. The high cost of prior review relative to contract value necessitates the low prior review percentage. Aggressive post-review, with all

contracts in any given county post-reviewed during supervision mission visits to the county, will provide a strong incentive for good performance. An estimated 20 percent of piped system contracts will be subject to post-review.

All good contracts to be procured using ICB will be subject to the Bank's prior review. Also subject to prior review are the first contract for goods for health education in each project province (4 contracts).

The threshold for prior review of contracts for consultants will be $100,000 equivalent for firms and $50,000 for individual contracts. For contracts below the threshold, prior review will apply to terms of reference above the thresholds noted above, single-source selection, assignments of a critical nature, and any amendments that would increase the original amount of the contract by more than 15%. Other contracts will be subject to selective post-award review. (Please note that given the nature of this project, the thresholds for procurement are not monetary, with the exception of consultancy services. Therefore, Table B has not been included.)

Disbursement

Allocation of loan proceeds (Table C)

The proposed IBRD loan of $16 million and IDA credit of $30 million would be disbursed over a period of about five and a half years, matching the original disbursement period under the second and third rural water supply project. This disbursement period is considered sufficient because implementation risks are mitigated by (a) 10 percent of the five-year investment program being prepared to final design level prior to appraisal; and (b) planning annual ICB procurement, thereby avoiding the bunching problems found in the second project. Civil works disbursement rates vary across provinces to reflect the different level of equipment and materials procured through ICB. Provinces with high civil works disbursement rates have less complex systems and higher rates of contractor-supplied materials.

Use of statements of expenditures (SOEs):

Disbursements will be made against statements of expenditure (SOEs), confirmed by the NPO, for: (a) contracts for (i) civil works valued at less than $2.5 million; and (ii) equipment and materials costing less than $0.5 million equivalent; (b) contracts for consulting services costing less than $100,000 equivalent for firms and $50,000 equivalent for individuals; and (c) training, study tours, and incremental costs (i.e. the cost of travel, accommodation, meals, and printing of survey materials) incurred by CPOs in connection with training and the carrying out of surveys. Documents supporting the SOEs will be retained by MOF and made available for inspection during the course of Bank supervision missions and by external auditors. All other disbursements will be made against fully documented expenditures.

Special account:

To expedite disbursements, four Special Accounts (one in each project province) will be established. The authorized allocation for the account will be decided at negotiations, but it is expected to be in the range of about four months' average disbursements. The accounts will be replenished monthly or whenever the Special Account is drawn down to 50 percent of its initial value, whichever occurs first.

Table A: Project Costs by Procurement Arrangements
(US$ million equivalent)

Expenditure Category	Procurement Method[1]				Total Cost
	ICB	NCB	Other[2]	N.B.F.	
1. Works	0.0 (0.0)	15.7 (7.5)	20.7 (7.7)	4.7 (0.0)	41.1 (15.2)
2. Goods	35.6 (26.7)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	35.6 (26.7)
3. Services	0.0 (0.0)	0.0 (0.0)	4.1 (3.9)	0.0 (0.0)	4.1 (3.9)
4. Miscellaneous	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	5.6 (0.0)	5.6 (0.0)
5. Interest during construction	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	5.4 (0.0)	5.4 (0.0)
6. Front-end fee	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.2 (0.2)	0.2 (0.2)
Total	35.6 (26.7)	15.7 (7.5)	24.8 (11.6)	15.9 (0.2)	92.0 (46.0)

1/ Figures in parenthesis are the amounts to be financed by the Bank Loan. All costs include contingencies

2/ Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs related to (i) managing the project, and (ii) re-lending project funds to local government units.

Table C: Allocation of Loan Proceeds

Expenditure Category	Amount in US$million	Financing Percentage
Civil Works	15.1	Anhui: 41 percent of expenditures Fujian: 44 percent of expenditures Guizhou: 39 percent of expenditures Hainan: 43 percent of expenditures
Goods, Equipment, Materials	26.8	100 percent of foreign expenditures, 100 percent of local expenditures (ex-factory, net of VAT), and 75 percent of other items procured locally
Training and Study Tours	2.0	100 percent of incremental expenditures
Consultant Services	0.4	100 percent of expenditures
Incremental Costs	1.5	100 percent of expenditures
Unallocated	0.0	
Total Project Costs	45.8	
Interest during construction	0.0	
Front-end fee	0.2	
Total	46.0	

TABLE D: Schedule of Disbursements

Bank fiscal year and sememster	IDA/IBRD ($ million)	Cumulative ($ million)		Project Profile /a	RWSS2 Profile /b	China Profile /c
2000						
First /d	2.0	2.0		4.0	6.0	0.0
Second	4.3	6.3		14.0	15.0	3.0
2001						
First	2.8	9.1		20.0	24.0	26.0
Second	5.6	14.7		32.0	33.0	26.0
2002						
First	5.0	19.7		43.0	46.0	38.0
Second	5.8	25.5		55.0	60.0	42.0
2003						
First	5.1	30.6		66.0	69.0	62.0
Second	5.5	36.1		78.0	78.0	82.0
2004						
First	3.2	39.3		88.0	85.0	86.0
Second	3.5	42.8		93.0	93.0	98.0
2005						
First	2.3	45.1		98.0	97.0	98.0
Second	0.9	46.0		100.0	100.0	100.0

/a This is the same disbursement profile as that for NRWS3 (Cr. N0270-CHA).
/b Disbursement profile for Rural Water Supply and Sanitation Project (Cr. 2336-CHA).

/c Disbursement profile for China (water and sanitation sector) issued August 1995.
/d Includes initial Special Account disbursement.

China
Fourth Rural Water Supply and Sanitation Project

Review of Financial Management System
February 1 -12, 1999

I. Background

1. *Scope/Objective of Review of Financial Management System.* This report is the result of a financial management review and analysis of the project as conducted by Junxue Chu, Financial Management Officer, EACCF and Nancy Chen, Financial Management Specialist, EAPCO. The scope of work has been set out in the 'Review of Financial Management System' as documented in the LACI Handbook, Annex 2. The objective of the review is to determine whether the project has in place an adequate financial management system as required by the Bank in OP/BP 10.02.

2. *Project objective.* The objective of the proposed Fourth Rural Water Supply and Sanitation Project (FRWSS) is 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 principle objective is to provide access to safe, conveniently located water to 3.1 million poor rural people in Anhui, Fujian, Guizhou and Hainan provinces, and to improve related water and sanitation practices. Key project performance indicators will be: (a) number of villages newly served by project-supplied water meeting national rural water quality standards; (b) number of improved latrines constructed in villages in the project counties and percentage point improvement compared to the baseline period in key water-related health behaviors; and (c) water charges sufficient to cover water systems operations and maintenance, and depreciation or loan/credit repayment.

3. *Project status.* The project is currently at pre-appraisal stage, scheduled for negotiation on April 12, 1999 in Beijing and submission to the Board in June 15, 1999. Implementation of the project is scheduled to run from June 1999 to June 2005.

II. Organizational Structure/Institutional Arrangements

4. *Organization Chart* (Attachment I). The overall responsible agency for the project is at the National level: National Project Office (NPO). Project implementation will be undertaken at the provincial, county and township level. In terms of project administration support, project management offices have been established in each individual province (PPO) and county (CPO). The financial accounting and reporting aspects of the project are to be handled by the national, provincial and county project management offices.

Each of the four provinces will have its respective Financial Bureau - ' World Bank Division' to manage, monitor and reconcile its Special Account, check and monitor withdrawal applications (WA) and to verify payment requests meet Bank requirements.(See VI for detailed discussion of Special Account, disbursements and supporting documentation.) As the Special Accounts are only accessible to and managed by the Provincial Financial Bureaus, cash management is segregated from project administration which is conducted at the PPOs and CPOs.

Each of the PPOs and CPOs is expected to maintain supporting documentation and is responsible for consolidated project level reporting at each appropriate level.

5. *Institutional experience with Bank-Financed Projects*. NPO was established to manage the Second Rural Water Supply and Sanitation Project. NPO, Provincial and County Finance Bureaus have had substantial previous experience with Bank financed projects and therefore are familiar with the existing disbursement, procurement, financial reporting and auditing requirements. However, the PPOs and CPOs (both Provincial and County levels) are new to working on/with Bank projects. Training on financial management will therefore be arranged primarily focusing on PPO and CPO staff (see Section VII for details). However, the counties involved all have previous experience with Bank financed projects (e.g. Health IV, Health VI and Intensive Irrigation Project).

III. Project Structure and Category

6. *Financing and Cost Sharing*. The financing of the project will be supported by IBRD (US$ 16 M), IDA (US$ 30 M) and Government financing (US$ 46 M) for a total estimated project cost of US$ 92 M.

7. *Loan Agreement Categories.* These will include: civil works, goods, consultant services, training and incremental costs. Each of the categories is broken down by Province.

8. *Project Components*. The project is comprised of the following three components:

a. Water Supply
b. Health Education & Sanitation
c. Project Management

IV. Internal and Other Controls

9. *Project Financial Management Systems Manual.* The objective of this Manual is to document the operational procedures and guidelines for project financial management encompassing all levels of project management (i.e. National, Provincial, County and Participating Agencies). The scope of the Manual will encompass financial management infrastructure and staffing (e.g. organization chart and job descriptions), identification of the accounting standards to be used by the project and all participating entities, project reporting formats and procedures for cash management, asset management, procurement and disbursements, counterpart fund management, budgeting and auditing. In terms of status, a template of this Manual has been provided to the NPO who will be responsible for drafting the Manual as well as the summary version to be attached to PIP. The summary version of the Manual is scheduled to be prepared on or before March 1, 1999, and the Manual will be available before negotiations.

10. *MoF/Provincial Regulations.* The administration, accounting and reporting of the Project are required to be set up in accordance with the following regulations/circulars as issued by the Ministry of Finance:

a. Circular #6 "Temporary Regulations on Financial and Accounting Management for Projects Financed by the World Bank" as issued by the World Bank Department of the Ministry of Finance in January 1997.

b. Circular #127: "Temporary Regulations on Accounting and Reporting for Projects Financed by the World Bank" issued in 1993 - provides the basis of accounting treatment for project activities and guidelines for project financial management. Although it is outdated, the chart of accounts designed by this Circular for use by Bank projects is still in effect.

c. Accounting Law issued January 1985 with subsequent amendments - includes job responsibilities for cashiers and accountants and financial management recording and reporting requirements.

d. MoF Agreement - An agreement has been reached by MoF on a standard set of financial statements to be used for World Bank projects. This agreement outdates the previous MoF Circular #6: "Temporary Regulations on Financial and Accounting Management for Projects Financed by the World Bank" issued January 1997. The format of the financial statements included in this MoF Agreement package is primarily based on the construction accounting standard noted in 11. below.

11. *Standards*. The Construction Accounting Standard issued by Accounting Department, MoF for construction oriented projects dictates the format of financial statements, chart of accounts and related instructions. As noted above, this standard will affect project accounting and reporting requirements.

V. Project Accounting Standards, Financial and Management Reporting

12. *Accounting standards*. The accounts will be prepared in accordance with the Circulars noted in section IV. above on an accrual accounting, double entry bookkeeping basis in accordance with Chinese accounting standards, including the above-noted construction accounting standard.

13. *Project Reporting*. Clearance has been received from MoF on a standard set of project financial statements which will be utilized by this project. In terms of reporting cycle, the project financial statements will be submitted to the Bank bi-annually, in a project consolidated form, and include the following: (a) Balance Sheet; (b) Sources and Uses of Funds by Project Component; (c) Statement of Implementation of Loan Agreement; (d) Statement of Implementation of Credit Agreement; and (e) Special Account Reconciliation Statement. Each of the project management offices will be managing, monitoring and maintaining their respective financial reports. Project level consolidation will be done by the Accountants at the Provincial and National levels.

14. *Counterpart funding*. Counterpart funding is to be provided by the following: (a) provincial, prefecture and county financing of US$23 M; and (b) beneficiary financing, in cash and in-kind, of US$ 23 M. The RMB equivalent value of the loan will be estimated on a purchasing power parity basis, and the sum of counterpart funding commitments will be expected to at least match the loan value in those terms.

VI. Special Account, Disbursements and Supporting Documentation

15. *Special Account*. Each of the four provincial Financial Bureaus will manage, monitor and maintain its respective Special Account. Corresponding USD accounts for Special Account related transactions will be held at the Prefecture (with the exception of Hainan Province where the Prefecture level will not be involved) and County level Finance Bureaus, acting as a channeling agent to transfer funds from the Provincial Special Account through to the township level. A proposal for a Special Account at the National level, for disbursements controlled by the NPO, is being discussed between NPO and MoF.

16. *Disbursements and Supporting Documentation*. The original copy of WAs and supporting documentation will be initially retained at the point of initiation, primarily the participating agencies, then transferred to CPOs for record keeping. A copy of WA and the supporting documentation will be required and retained at the Financial Bureau for amounts exceeding the SOE threshold.. Disbursement application processing will take two months of processing time from Participating Agency to Provincial Finance

Bureau. (This point will be addressed in the FMS manual).

VII. Staffing and Training

17. *Staffing.* As noted in Section II, though the NPO and the Provincial Finance Bureaus are experienced with Bank projects, the PPOs and CPOs do not have experience with prior Bank projects and therefore may be unfamiliar with Bank procedures. The accountants at both the PPOs and CPOs are new to Bank projects; however, discussions with the project staff indicated that the accountants all have prior accounting experience. In terms of the status of hiring, at present, the NPO is fully staffed; accountants at the Provincial and County levels are being hired for the duration of the project implementation.

18. *Training.* It is suggested, as many PPO and CPO staff are new to Bank projects, that training should be arranged for all project management offices and Participating Agencies on the following: (a) Bank procedures and requirements on the withdrawal of Bank funds; (b) the newly revised project financial statement formats; (c) performance indicator and procurement reporting requirements; and (d) project audit requirements.

VIII. Audit Arrangements

19. The Bank requires the Project to have its project financial statements audited in accordance with standards acceptable to the Bank. It is anticipated that the National Audit Office and its branch will be found acceptable by the Bank for the purposes of auditing project financial statements. The audit reports will be scheduled for submission to the Bank within 6 months after the end of the calendar year.

IX. Budgeting

20. The annual budget will be prepared by respective CPOs and reviewed, consolidated and approved by the County level Finance Bureau prior to submitting to PPOs. PPOs will review, consolidate and approve the budget prior to submitting to the Provincial Finance Bureau, who after the review and approval, will submit it to NPO. Procedures used in the budgeting process are expected to be detailed in the financial management systems manual and serve as a guide for all parties involved.

X. Issues/Next steps

21. *Financial Management Systems Manual.* As noted in Section IV, a summary version of the manual is being prepared by the NPO. It will be submitted for review by the Bank financial management staff on or before March 1, 1999. It has been agreed by the NPO that a draft Manual will be provided for review and comment by the Bank financial management staff on or before April 2, 1999, and the Manual will be finalized before negotiations. It has also been agreed by the NPO that each PPOs will revise the Manual to suit its own financial management system by loan effectiveness. Discussions with the project staff indicate that at both NPO and Finance Bureau, there is a lack of segregation of duties for bookkeeping and cash custody; in other words, the individual is both an accountant and cashier. NPO has agreed that incompatible functions should be separated at all levels or in any event that reality does not allow sufficient segregation of duties or such segregation renders operation impractical or unrealistic, secondary controls (such as review by another higher-level staff) will be in place to fill in the gap.

22 *Allocation of common costs.* Discussions with the project staff indicate that certain common costs such as training, incurred at the National and Provincial level, would be allocated to the County level. Such costs once allocated, would be recorded in the County level sub-ledger and therefore would not

appear in the respective books at the National and Provincial level. Thus it is imperative that common costs be defined and addressed in the on-lending agreement.

23. *Foreign Exchange Risk.* Although MoF agreed that provincial governments will assume the foreign exchange risk connected with loan repayments, currently PPOs are not sure who will bear such risk, i.e. township or counties. This issue needs to be resolved between the MoF and the Provincial government and addressed in the on-lending agreement.

24. *Training.* NPO has agreed to provide training to all levels of the project financial management staff and Participating Agencies, and to invite National Audit Office staff (NAO) to participate in the training, on the following: (a) Bank procedures and requirements on the withdrawal of Bank funds; (b) the newly revised project financial statement formats; (c) performance indicator and procurement reporting requirements; and (d) project audit requirements. The training is expected to be conducted in June 1999.

25. *Staffing.* As soon as the hiring is completed, a listing of new Accountants /DOs should be provided for the Bank financial management staff for review of the background, qualifications and experience.

26. *Quality of Project Accounting Records.* Since the bulk of the activities will take place at the township level whilst the accounting records (i.e. sub-ledgers and original vouchers) will be transferred to and maintained at the County level for bookkeeping and Bank supervision missions, there is a concern for the completeness and accuracy of the accounting records being transferred to the CPOs, who are responsible for the recording and maintenance of accounting information. This situation will need to be addressed as a priority during the training and supervision missions.

27. *Competence of County Audit Office staff.* Discussions with a Provincial Audit Office staff member indicates that County Audit Office staff in general do not have as good credentials as the Provincial Audit Office staff. A training course on Audit Manual was provided to the NAO in August 1998 by PricewaterhouseCoopers. The Bank should consider having NAO provide training to its provincial and county level staff.

XI. Conclusion

28. Pending addressing the issues noted above, the financial management team has determined that the project will be satisfying the Bank's financial management requirements as required by OP/BP 10.02. The project will be disbursing based on the traditional disbursement techniques and will not be using PMR-based disbursements, in accordance with the agreement reached between the Bank and the China Ministry of Finance.

Annex 7: Project Processing Schedule

CHINA: Fourth Rural Water Supply and Sanitation Project

Project Schedule	Planned	Actual
Time taken to prepare the project (months)		
First Bank mission (identification)	10/14/98	10/14/98
Appraisal mission departure	03/29/99	03/24/99
Negotiations	04/12/99	04/12/99
Planned Date of Effectiveness	09/15/99	

Prepared by:

National Patriotic Health Campaign Committee, China Water Supply and Sanitation National Project Office

Preparation assistance:

Japanese PHRD Grants

Bank staff who worked on the project included:

Name	Speciality
Task Team	
George Plant (Team Leader), EACCF	Engineering/Technical
Dawn Vermilya, EACCF	Finance
Mark Wu, EACCF	Operations/Economics
Xiaofeng Li, EACCF	Operations
Lee Travers, TWUWS	Economics/Environment
Ping Huang (Consultant)	Health, hygiene, and sanitation education
Ai Chin Wee, WSP	Participation
Chongwu Sun, EACCF	Environment
Junxue Chu, EACCF	Disbursement
Margaret Png, LEGEA	Legal
Nancy Chen, EAPCO	Financial Management Assessment
Jinan Shi, EACCF	Procurement
Youlan Zou, EACCF	Resettlement
Peer Reviewers	
Caroline van den Berg, LCSFP	Economics
Richard Pollard, WSP	Rural water/Sanitation
Brian Smith, ECSIN	Finance

Annex 8: Documents in the Project File*
CHINA: Fourth Rural Water Supply and Sanitation Project

A. Project Implementation Plan

Project Implementation Plan (PIP), May 1999

B. Bank Staff Assessments

C. Other

Preparation Documents

Anhui Province Project Proposal Report, September 1998
Fujian Province Project Proposal Report, October 1998
Guizhou Province Project Proposal Report, September 1998
Hainan Province Project Proposal Report, September 1998
NPO Plans for Training and Allocation of PHRD Funding, November 1998
NPO Feasibility Study Report, March 1999
Anhui Province Feasibility Study Report, January 1999
Fujian Province Feasibility Study Report, January 1999
Guizhou Province Feasibility Study Report, January 1999
Hainan Province Feasibility Study Report, January 1999
County-level Feasibility Study Reports for all 27 project counties, January 1999
Anhui Province Land Management Regulation, December 1992
Fujian Province Land Management Regulation, August 1998
Guizhou Province Land Management Regulation, September 1998
Hainan Province Land Management Regulation, October 1997

*Including electronic files

Annex 9: Statement of Loans and Credits

CHINA: Fourth Rural Water Supply and Sanitation Project

Project ID	FY	Borrower	Purpose	Original Amount in US$ Millions				Difference between expected and actual disbursements*	
				IBRD	IDA	Cancel.	Undisb.	Orig	Frm Rev'd
Number of Closed Projects: 106									
CN-PE-3653	1999	PEOPLE'S REPUBLIC OF CHIN	CONTAINER TRANSPORT	71.00	0.00	0.00	71.00	0.00	0.00
CN-PE-41890	1999	PEOPLE'S REPUBLIC OF CHIN	LIAONING URB TRANSP	150.00	0.00	0.00	150.00	0.00	0.00
CN-PE-49665	1999	PRC	ANNING VALLEY AG.DEV	90.00	30.00	0.00	119.03	0.00	0.00
CN-PE-50036	1999	PEOPLE'S REPUBLIC OF CHIN	ANHUI PROVINCIAL HWY	200.00	0.00	0.00	200.00	7.45	0.00
CN-PE-51856	1999	MINISTRY OF FINANCE	ACCNTG REFORM & DEV	27.40	5.61	0.00	32.96	1.36	0.00
CN-PE-63123	1999	PRC	YANGTZE FLOOD EMERGY	40.00	40.00	0.00	79.21	0.00	0.00
CN-PE-3539	1998	PRC	SUST COAST RES DEV	100.00	0.00	0.00	96.00	-0.25	0.00
CN-PE-3566	1998	PRC	BASIC HEALTH	0.00	85.00	0.00	81.99	0.05	0.00
CN-PE-35698	1998	PRC	HUNAN POWER DEVELOP.	300.00	0.00	0.00	300.00	9.00	0.00
CN-PE-3591	1998	GOC	STATE FARMS COMMERCI	150.00	0.00	0.00	102.59	-32.91	0.00
CN-PE-3606	1998	PEOPLE'S REPUBLIC OF CHIN	ENERGY CONSERVATION	63.00	0.00	0.00	63.00	2.87	0.00
CN-PE-3614	1998	MINISTRY OF FINANCE	GUANGZ. CITY CRT.TRP	200.00	0.00	0.00	192.00	5.61	0.00
CN-PE-3619	1998	CHINA	2ND INLAND WATERWAYS	123.00	0.00	0.00	123.00	18.50	0.00
CN-PE-36414	1998	PEOPLES REPUBLIC OF CHINA	GUANGXI URBAN ENV.	72.00	20.00	0.00	88.83	-1.20	0.00
CN-PE-36949	1998	PRC	NAT.HWY 3-HUBEI	250.00	0.00	0.00	242.00	12.00	0.00
CN-PE-40185	1998	PEOPLE'S REPUBLIC OF CHIN	SHANDONG ENVIRONMENT	95.00	0.00	0.00	92.00	21.75	0.00
CN-PE-45788	1998	PRC	TRI-PROVINCIAL HWY	230.00	0.00	0.00	230.00	39.70	0.00
CN-PE-46563	1998	PRC	TARIM BASIN II	90.00	60.00	0.00	140.76	5.11	0.00
CN-PE-46952	1998	PRC	FOREST. DEV. POOR AR	100.00	100.00	0.00	200.81	8.50	17.00
CN-PE-49700	1998	GOC	IAIL-2	300.00	0.00	0.00	280.00	3.30	0.00
CN-PE-51736	1998	PRC	E. CHINA/JIANGSU PWR	250.00	0.00	0.00	250.00	92.38	0.00
CN-PE-56491	1998	PRC	HEBEI EARTHQUAKE	0.00	28.40	0.00	10.66	-9.81	0.00
CN-PE-34081	1997	PRC	XIAOLANGDI MULTI. II	430.00	0.00	0.00	331.51	89.27	0.00
CN-PE-3590	1997	PRC	QINBA MTS. POVTY RED	30.00	150.00	0.00	148.35	23.88	0.00
CN-PE-3635	1997	PRC	VOC. ED. REFORM PROJ	10.00	20.00	0.00	15.19	1.30	0.00
CN-PE-3637	1997	PRC	NATL RUR WATER III	0.00	70.00	0.00	62.10	10.38	0.00
CN-PE-36405	1997	PRC	WANJIAZHAI WATER TRA	400.00	0.00	0.00	320.09	5.08	0.00
CN-PE-3643	1997	GOC	XINJIANG HIGHWAYS II	300.00	0.00	0.00	230.72	57.72	0.00
CN-PE-3650	1997	PRC	TUOKETUO POWER/INNER	400.00	0.00	0.00	394.61	137.17	0.00
CN-PE-3654	1997	PRC	HUNAN/GUANG HWY2-NH2	400.00	0.00	0.00	336.64	86.62	0.00
CN-PE-36952	1997	PRC	BASIC ED. IV	0.00	85.00	0.00	41.37	-26.19	0.00
CN-PE-38988	1997	PRC	HEILONGJIANG ADP	120.00	0.00	0.00	93.02	8.38	0.00
CN-PE-44485	1997	GOC	SHANGHAI WAIGAOQIAO	400.00	0.00	0.00	400.00	53.05	0.00
CN-PE-34618	1996	PRC	LABOR MARKET DEV.	10.00	20.00	0.00	24.00	22.16	0.00
CN-PE-3507	1996	P.R.C.	ERTAN HYDRO II	400.00	0.00	0.00	25.23	-22.55	0.00
CN-PE-3563	1996	PRC	ANIMAL FEED	150.00	0.00	0.00	138.78	110.45	18.79
CN-PE-3569	1996	PRC	SHANGHAI-ZHEJIANG HI	260.00	0.00	7.75	110.73	32.49	22.50
CN-PE-3589	1996	YUNNAN PROV. GOV.	DISEASE PREVENTION	0.00	100.00	0.00	69.06	58.11	0.00
CN-PE-3594	1996	PRC	GANSU HEXI CORRIDOR	60.00	90.00	0.00	125.65	26.19	0.00
CN-PE-3599	1996	PRC	YUNNAN ENVIRONMENT	125.00	25.00	0.00	139.13	18.15	0.00
CN-PE-3602	1996	PRC	HUBEI URBAN ENV. PRO	125.00	25.00	0.00	123.98	76.31	0.00
CN-PE-3638	1996	SHANGHAI MUN. GOVT	SEEDS SECTOR COMMER.	80.00	20.00	0.00	80.15	27.70	0.00
CN-PE-3646	1996	CHINA	CHONGQING IND POL CT	170.00	0.00	77.99	91.22	102.45	0.00
CN-PE-3648	1996	PRC	SECOND SHANGHAI SEWE	250.00	0.00	0.00	157.96	76.95	0.00
CN-PE-3649	1996	PRC	SHANXI POVERTY ALLEV	0.00	100.00	0.00	34.56	-8.05	0.00
CN-PE-3652	1996	PRC	2ND SHAANXI PROV HWY	210.00	0.00	0.00	139.29	51.28	0.00
CN-PE-36950	1996	PRC	BASIC ED. POOR III	0.00	100.00	0.00	11.93	-20.76	0.00
CN-PE-40513	1996	PRC	2ND HENAN PROV HWY	210.00	0.00	0.00	175.14	51.14	0.00
CN-PE-3493	1995		INLAND WATERWAYS	420.00	0.00	0.00	275.02	-9.54	0.00
CN-PE-3571	1995		RAILWAYS VII	400.00	0.00	29.00	344.67	201.66	-2.97

Project ID	FY	Borrower	Purpose	Original Amount in US$ Millions				Difference between expected and actual disbursements*	
				IBRD	IDA	Cancel.	Undisb.	Orig	Frm Rev'd
CN-PE-3585	1995	GOC	SHENYANG IND. REFORM	175.00	0.00	0.00	97.54	49.74	0.00
CN-PE-3596	1995	PRC	YANGTZE BASIN WATER	100.00	110.00	0.00	35.28	-12.19	0.00
CN-PE-3598	1995	PRC	LIAONING ENVIRONMENT	110.00	0.00	0.00	70.21	58.65	0.00
CN-PE-3600	1995	PRC	TECHNOLOGY DEVELOPME	200.00	0.00	0.00	125.74	43.65	0.00
CN-PE-3603	1995	MOF	ENT. HOUSING SOC. SE	275.00	75.00	20.00	199.84	155.96	7.94
CN-PE-36041	1995	PRC	FISCAL & TAX REF. &	50.00	25.00	0.00	66.31	41.61	0.00
CN-PE-3612	1995	PRC	XINJIANG HIGHWAY I	150.00	0.00	0.00	47.85	37.86	0.00
CN-PE-3634	1995	PRC	MATERNAL CHILD HEALT	0.00	90.00	0.00	18.42	8.84	0.00
CN-PE-3636	1995	PRC	BASIC EDUC IN POOR &	0.00	100.00	0.00	3.39	-1.46	0.00
CN-PE-3639	1995	PRC	SOUTHWEST POV. REDUC	95.00	200.00	0.00	143.78	32.70	0.00
CN-PE-3642	1995	GOC	ZHEJIANG POWER DEVT	400.00	0.00	0.00	136.50	-44.02	0.00
CN-PE-3647	1995	PRC	ECONOMIC LAW REFORM	0.00	10.00	0.00	5.51	5.59	0.00
CN-PE-36947	1995	MOH	SICHUAN TRANSMISSION	270.00	0.00	0.00	132.50	119.80	80.99
CN-PE-37156	1995	PRC	IODINE DEF. DISORDER	7.00	20.00	7.00	1.91	11.57	-0.19
CN-PE-3502	1994	PRC	RUR HEALTH MANPOWER	0.00	110.00	0.00	29.62	24.07	0.00
CN-PE-3504	1994	PRC	HEBEI/HENAN NATIONAL	380.00	0.00	0.00	48.65	15.63	0.00
CN-PE-3540	1994	PRC	LOESS PLATEAU	0.00	150.00	0.00	27.96	-23.21	0.00
CN-PE-3557	1994	PRC	FOREST RESOURCE DEV	0.00	200.00	0.00	40.47	13.01	-32.36
CN-PE-3562	1994	PRC	XIAOLANGDI MULTIPURPOSE	460.00	0.00	0.00	0.83	0.83	0.00
CN-PE-3586	1994	PRC	SHANGHAI ENVIRONMENT	160.00	0.00	0.00	62.73	57.29	0.00
CN-PE-3593	1994	GOC	SONGLIAO PLAIN ADP	0.00	205.00	0.00	25.39	-12.80	0.00
CN-PE-3595	1994	SHANGHAI MUNICIPAL GOVT	RED SOILS II DEVELOP	0.00	150.00	0.00	40.36	16.45	0.00
CN-PE-3609	1994	GOC	SICHUAN GAS DEV & CONSERVATION	255.00	0.00	0.00	122.62	71.13	0.00
CN-PE-3622	1994	GOVERNMENT OF PRC	SHANGHAI MTP II	150.00	0.00	0.00	7.36	7.37	0.00
CN-PE-3626	1994	PRC	FUJIAN PROV HIGHWAY	140.00	0.00	0.00	58.63	36.62	8.35
CN-PE-3633	1994	PRC	TELECOMMUNICATIONS	250.00	0.00	30.00	15.27	45.27	0.00
CN-PE-3641	1994	P.R.C.	YANGZHOU THERMAL POW	350.00	0.00	0.00	74.09	57.77	0.00
CN-PE-3644	1994	GOVT OF PEOPLES REP. OF C	XIAOLANGDI RESETTLEMENT	0.00	110.00	0.00	25.56	8.87	0.00
CN-PE-3473	1993	PRC	ZHEJIANG MULTICITIES	0.00	110.00	0.00	19.79	19.17	0.00
CN-PE-3512	1993	PRC	SHANGHAI PORT REST.	150.00	0.00	25.74	3.88	29.10	2.86
CN-PE-3518	1993	PRC	GUANGDONG PROV. TRANSPORT	240.00	0.00	0.00	2.08	-0.94	0.00
CN-PE-3533	1993	PRC	TIANJIN IND. II	150.00	0.00	40.35	13.59	44.43	7.93
CN-PE-3559	1993	PRC	AGRIC. SUPPORT SERVI	0.00	115.00	0.00	10.41	-1.50	0.00
CN-PE-3561	1993	PRC	SICHUAN ADP	0.00	147.00	0.00	5.49	0.00	0.00
CN-PE-3567	1993	PRC	EFFECTIVE TEACHING S	0.00	100.00	0.00	9.59	7.96	8.04
CN-PE-3570	1993	PRC	RAILWAY VI	420.00	0.00	0.00	94.61	93.62	0.00
CN-PE-3580	1993	PRC	SO.JIANGSU ENVIRON. PROTECT.	250.00	0.00	0.00	4.15	-0.31	0.00
CN-PE-3581	1993	PRC	HENAN PROV. TRANSPORT	120.00	0.00	0.00	9.59	9.60	0.00
CN-PE-3592	1993	PRC	REF. INST'L.& PREINV	0.00	50.00	0.00	18.47	18.48	0.00
CN-PE-3597	1993	PRC	TAIHU BASIN FLOOD CO	100.00	100.00	0.00	47.43	43.08	0.00
CN-PE-3616	1993	ROC	TIANHUANGPING HYDRO	300.00	0.00	0.00	65.95	49.37	0.00
CN-PE-3623	1993	PRC	FINANCIAL SECTOR T.A	0.00	60.00	0.00	19.16	16.21	0.00
CN-PE-3627	1993	BEIJING MUNICIPALITY	GRAIN DISTRIBUTION P	325.00	165.00	0.00	325.46	322.19	86.20
CN-PE-3632	1993	R.O.C.	ENVIRONMENT TECH ASS	0.00	50.00	0.00	10.71	11.06	0.03
CN-PE-3503	1992		ZOUXIAN THERMAL POWE	310.00	0.00	0.00	7.79	7.80	0.00
CN-PE-3534	1992		ZHEJIANG PROV TRANSP	220.00	0.00	0.00	19.91	19.92	12.42
CN-PE-3564	1992		BEIJING ENVIRONMENT	45.00	80.00	0.00	25.28	20.02	8.32
CN-PE-3565	1992		SHANGHAI METRO TRANS	0.00	60.00	1.69	1.32	-0.08	0.00
CN-PE-3568	1992		TIANJIN URB DEV & EN	0.00	100.00	0.00	18.33	15.24	-2.50
			Total:	14,868.40	3,866.01	239.52	9,983.25	2,975.25	243.35

	Active Projects	Closed Projects	Total
Total Disbursed (IBRD and IDA):	8,558.59	12,529.50	21,088.09
of which has been repaid:	73.75	2,515.23	2,588.98
Total now held by IBRD and IDA:	18,550.68	9,648.52	28,199.20
Amount sold:	0.00	0.00	0.00
of which repaid:	0.00	0.00	0.00

Total Undisbursed:	9,983.25	21.95	10,005.20

* Actual disbursements to date minus intended disbursements to date as projected at appraisal.

CHINA
STATEMENT OF IFC's
Held and Disbursed Portfolio
31-Mar-1999
In Millions US Dollars

		Committed				Disbursed			
		IFC				IFC			
FY Approval	Company	Loan	Equity	Quasi	Partic	Loan	Equity	Quasi	Partic
0	Pacific Ports	0.00	0.00	3.64	0.00	0.00	0.00	3.64	0.00
1987/92/94	China Bicycles	8.50	0.00	3.39	0.00	8.50	0.00	3.39	0.00
1993	Shenzhen PCCP	3.76	0.00	0.99	0.00	3.76	0.00	0.99	0.00
1993	Yantai Cement	13.51	0.00	1.95	7.22	13.51	0.00	1.95	7.22
1994	China Walden Mgt	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00
1994	China Walden JV	0.00	0.00	6.00	0.00	0.00	0.00	3.53	0.00
1994	Dalian Glass	20.50	0.00	2.40	40.50	20.50	0.00	2.40	40.50
1994	Dynamic Fund	0.00	0.00	12.35	0.00	0.00	0.00	10.08	0.00
1994/97	PTP Leshan	11.20	0.00	1.00	14.00	11.20	0.00	1.00	14.00
1995	Dupont Suzhou	23.36	0.00	4.15	46.80	23.36	0.00	4.15	46.80
1995	Newbridge Inv.	0.00	0.00	7.19	0.00	0.00	0.00	3.89	0.00
1995	Suzhou PVC	22.00	0.00	2.48	22.20	22.00	0.00	2.48	22.20
1996	Beijing Hormel	4.64	0.00	0.50	4.95	4.64	0.00	0.50	4.95
1996	Jingyang	40.00	0.00	0.00	100.00	40.00	0.00	0.00	100.00
1996	Nanjing Kumho	15.03	0.00	3.81	42.73	12.66	0.00	3.81	35.98
1996	Tianjin Kumho	11.17	0.00	0.00	33.00	0.00	0.00	0.00	0.00
1996	Weihai Weidongri	3.83	0.00	0.00	0.00	3.83	0.00	0.00	0.00
1997	Ningbo	0.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00
1997	Orient Finance	13.33	0.00	0.00	16.67	13.33	0.00	0.00	16.67
1997	PTP Hubei	12.63	0.00	0.00	25.38	10.96	0.00	0.00	22.04
1997	Rabobank PTPC	2.40	0.00	0.00	2.40	0.00	0.00	0.00	0.00
1998	Caltex Ocean	21.00	0.00	0.00	45.00	16.23	0.00	0.00	34.77
1998	Chengxin-IBCA	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00
1998	Leshan Scana	6.10	0.00	1.35	0.00	0.00	0.00	0.00	0.00
1998	Rabobank SHFC	2.75	0.00	0.00	2.75	2.25	0.00	0.00	2.25
	Total Portfolio:	235.71	0.00	53.57	403.60	206.73	0.00	43.82	347.38

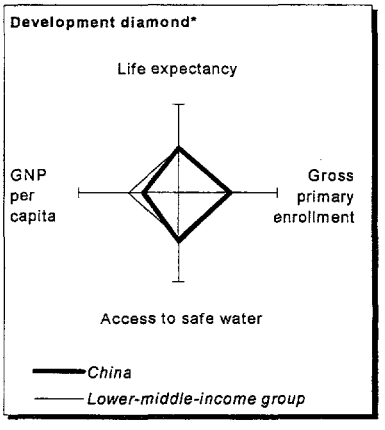
		Approvals Pending Commitment			
FY Approval	Company	Loan	Equity	Quasi	Partic
1998	CHENGDU CHEMICAL	7.40	3.20	0.00	8.60
1998	EURECA	0.00	3.00	0.00	0.00
1998	JIANGSU COLINE	6.50	0.00	0.00	0.00
1998	ORIENT FIN A INC	3.33	0.00	0.00	0.00
1998	SHANGHAI KRUPP	30.00	0.00	0.00	78.44
1998	WUHAN CIG	0.00	1.50	0.00	0.00
1998	WUHAN PORT	5.00	0.00	0.00	5.00
1998	ZHEJIANG COLINE	6.50	0.00	0.00	0.00
1998	XIB	50.00	20.00	0.00	0.00
1998	ZHEN JING	4.50	0.00	0.00	0.00
1997	CHINEFARGE	12.80	0.00	0.00	20.00
1997	NISSAN/DONGFENG	20.20	0.00	0.00	27.00
1997	SMC	14.00	0.00	0.00	14.00
1997	PTP HOLDINGS	0.00	1.50	0.00	0.00
	Total Pending Commitment:	160.23	29.20	0.00	153.04

Annex 10: Country at a Glance

CHINA: Fourth Rural Water Supply and Sanitation Project

1/28/99

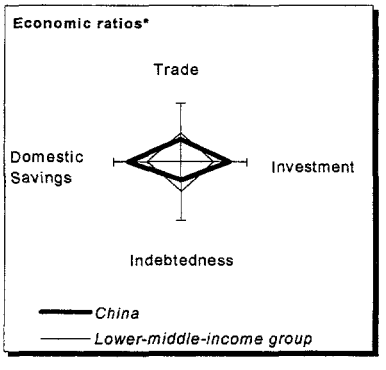
POVERTY and SOCIAL	China	East Asia & Pacific	Lower-middle-income
1997			
Population, mid-year *(millions)*	1,227.2	1,753	2,282
GNP per capita *(Atlas method, US$)*	860	970	1,230
GNP *(Atlas method, US$ billions)*	1,055.4	1,707	2,818
Average annual growth, 1991-97			
Population *(%)*	1.1	1.3	1.2
Labor force *(%)*	1.1	1.4	1.3
Most recent estimate (latest year available, 1991-97)			
Poverty *(% of population below national poverty line)*	7	..	..
Urban population *(% of total population)*	32	32	42
Life expectancy at birth *(years)*	70	68	69
Infant mortality *(per 1,000 live births)*	32	38	36
Child malnutrition *(% of children under 5)*	16	16	..
Access to safe water *(% of population)*	90	84	84
Illiteracy *(% of population age 15+)*	19	17	19
Gross primary enrollment *(% of school-age population)*	120	118	114
Male	121	120	116
Female	120	119	113



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

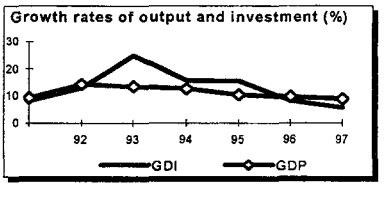
	1976	1986	1996	1997
GDP *(US$ billions)*	151.6	295.7	816.5	902.0
Gross domestic investment/GDP	27.9	37.7	39.6	38.2
Exports of goods and services/GDP	5.0	12.2	21.0	23.0
Gross domestic savings/GDP	28.5	35.2	41.7	42.7
Gross national savings/GDP	28.5	35.3	40.4	41.4
Current account balance/GDP	0.2	-2.5	0.9	3.2
Interest payments/GDP	..	0.2	0.6	0.6
Total debt/GDP	..	8.0	15.8	16.3
Total debt service/exports	..	9.6	8.7	8.6
Present value of debt/GDP	..	..	..	14.9
Present value of debt/exports	..	..	..	62.7

	1976-86	1987-97	1996	1997	1998-02
(average annual growth)					
GDP	9.3	10.1	9.6	8.8	..
GNP per capita	8.3	8.6	8.7	7.4	..
Exports of goods and services	18.8	16.6	5.6	27.6	..

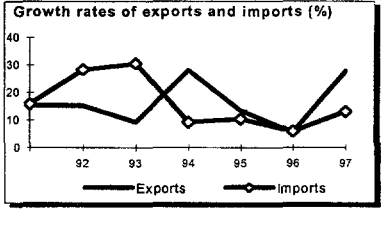


STRUCTURE of the ECONOMY

	1976	1986	1996	1997
(% of GDP)				
Agriculture	32.8	27.1	20.4	18.7
Industry	45.4	44.0	49.5	49.2
Manufacturing	29.5	35.5	37.8	37.3
Services	21.7	28.9	30.1	32.1
Private consumption	64.0	51.4	46.7	45.7
General government consumption	7.5	13.4	11.6	11.6
Imports of goods and services	4.5	14.7	18.9	18.5



	1976-86	1987-97	1996	1997
(average annual growth)				
Agriculture	6.0	4.4	5.1	3.5
Industry	11.0	13.8	12.1	10.8
Manufacturing	12.8	13.3	11.6	9.9
Services	12.0	8.7	7.9	8.3
Private consumption	9.3	8.8	11.1	6.2
General government consumption	9.4	9.9	9.5	8.2
Gross domestic investment	10.8	11.2	8.2	5.6
Imports of goods and services	22.5	12.8	5.9	13.1
Gross national product	9.8	9.9	9.8	8.5



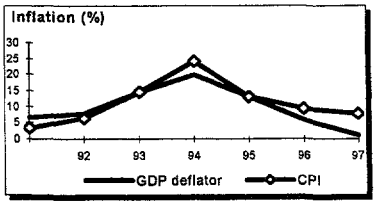
Note: 1997 data are preliminary estimates.

This table was produced from the Development Economics central database.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

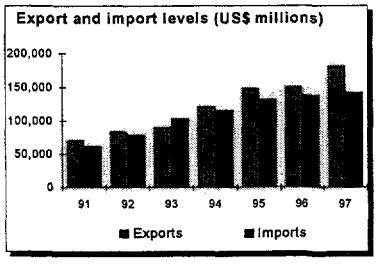
PRICES and GOVERNMENT FINANCE

	1976	1986	1996	1997
Domestic prices				
(% change)				
Consumer prices	..	6.5	9.4	7.9
Implicit GDP deflator	4.0	4.6	5.9	1.2
Government finance				
(% of GDP, includes current grants)				
Current revenue	..	24.0	11.4	12.0
Current budget balance	..	5.6	0.6	0.6
Overall surplus/deficit	..	-1.8	-1.5	-1.5



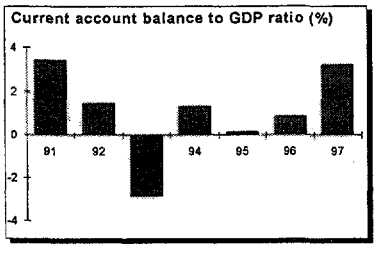
TRADE

	1976	1986	1996	1997
(US$ millions)				
Total exports (fob)	..	30,942	151,066	182,696
Food	..	4,448	10,232	11,054
Fuel	..	3,683	5,929	6,987
Manufactures	..	19,670	129,141	158,767
Total imports (cif)	..	42,904	138,838	142,361
Food	..	2,002	7,866	6,308
Fuel and energy	..	504	6,877	10,306
Capital goods	..	20,415	59,610	57,930
Export price index *(1995=100)*	..	66	..	..
Import price index *(1995=100)*	..	69	..	..
Terms of trade *(1995=100)*	..	96	..	..



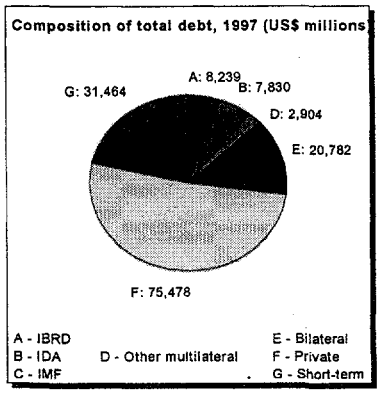
BALANCE of PAYMENTS

	1976	1986	1996	1997
(US$ millions)				
Exports of goods and services	7,383	29,583	171,700	207,253
Imports of goods and services	7,125	37,472	154,100	166,755
Resource balance	258	-7,889	17,600	40,498
Net income	0	176	-12,370	-15,900
Net current transfers	0	255	1,922	4,660
Current account balance	258	-7,458	7,152	29,258
Financing items (net)	..	5,410	28,248	6,599
Changes in net reserves	..	2,048	-35,400	-35,857
Memo:				
Reserves including gold *(US$ millions)*	..	16,417	111,728	146,448
Conversion rate *(DEC, local/US$)*	1.9	3.5	8.3	8.3



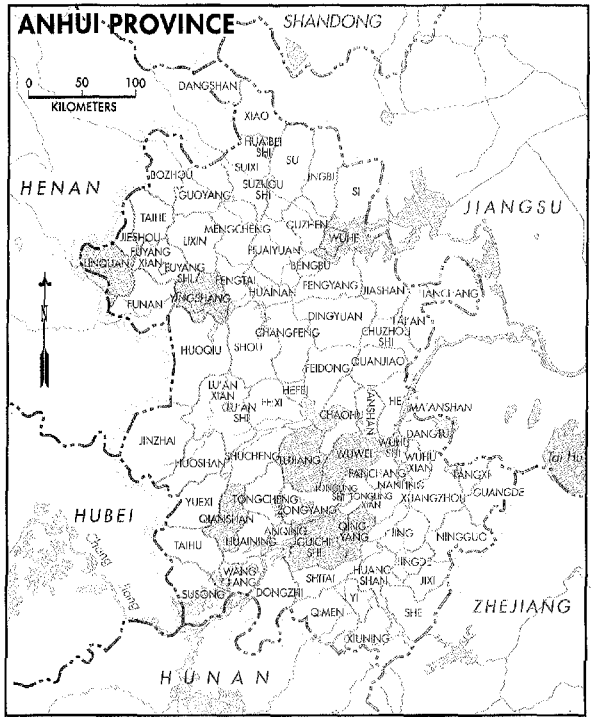
EXTERNAL DEBT and RESOURCE FLOWS

	1976	1986	1996	1997
(US$ millions)				
Total debt outstanding and disbursed	..	23,719	128,817	146,697
IBRD	..	965	7,616	8,239
IDA	..	774	7,579	7,830
Total debt service	..	2,974	15,756	18,445
IBRD	..	66	840	858
IDA	..	8	73	81
Composition of net resource flows				
Official grants	..	155	249	228
Official creditors	..	1,165	4,401	4,315
Private creditors	..	3,693	6,454	8,134
Foreign direct investment	..	1,875	40,180	44,236
Portfolio equity	..	0	3,466	8,457
World Bank program				
Commitments	..	1,120	1,900	2,425
Disbursements	..	607	2,097	2,275
Principal repayments	..	0	364	377
Net flows	..	607	1,734	1,898
Interest payments	..	75	549	562
Net transfers	..	532	1,185	1,335



Note: This table was produced from the Development Economics central database. 1/28/99

MAP SECTION



CHINA
FOURTH RURAL WATER SUPPLY AND SANITATION PROJECT

PROJECT COUNTIES

PROVINCE BOUNDARIES

COUNTY (XIAN) BOUNDARIES

RIVERS

INTERNATIONAL BOUNDARIES (INSET)

This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.