Document of
The World Bank

Report No: 18663 CHA

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN OF US$90 MILLION

AND A PROPOSED CREDIT EQUIVALENT TO SDR 21.4 MILLION

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR THE

ANNING VALLEY AGRICULTURAL DEVELOPMENT PROJECT

December 10, 1998

Rural Development & Natural Resources Sector Unit, EASRD
East Asia & Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective as of November 1998)

Currency Unit	=	Yuan (Y)
Y 1.00	=	$0.12
$1.00	=	Y 8.3

FISCAL YEAR

January 1- December 31

WEIGHTS AND MEASURES

1 meter (m)	=	3.28 feet (ft)
1 square meter (m^2)	=	10.76 square feet
1 cubic meter (m^3 or cm)	=	35.31 cubic feet
1 kilometer (km)	=	0.62 miles
1 hectare (ha)	=	15 mu
1 ton (t)	=	1,000 kg
1 kilogram (kg)	=	2.2 pounds
1 million watts (W)	=	1 MW (1 Megawatt)
1 million kilowatts (kW)	=	1 GW (1 Gigawatt)

ABBREVIATIONS AND ACRONYMS

ADP	Agricultural Development Project
BOF	Bureau of Finance
CAS	Country Assistance Strategy
CIF	Cost, Insurance and Freight
DHDC	Daqiao Hydroelectric Development Corporation
DSRP	Dam Safety Review Panel
ERR	Economic Rate of Return
FAO/CP	Food and Agriculture Organization/ Cooperative Programme
FMS	Financial Management Systems
FRR	Financial Rate of Return
HCO	Huangqiao Construction Office
HPS	Hydro Power Stations
ICAMA	Institute for Control of Agricultural Chemicals
ICB	International Competitive Bidding
kWh	kilowatt hour
MNDP	Minority Nationality Development Plan
MOF	Ministry of Finance
NCB	National Competitive Bidding
NPV	Net Present Value
O&M	Operation and Maintenance
PAP	Project Affected People
PLG	Project Leading Group
PMO	Project Management Office
PPMO	Provincial Project Management Office
RAP	Resettlement Action Plan
SA	Special Account
SHSI	Sichuan Hydraulic Science Institute
SOE	Statement of Expenses
STC	Scientific and Technical Committee
SWCB	Sichuan Water Conservancy Bureau

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Task Team Leader: Rapeepun Jaisaard

China
Anning Valley Agricultural Development Project

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China
Anning Valley Agricultural Development Project

Project Appraisal Document

East Asia & Pacific
Rural Development & Natural Resources Sector Unit

Date: 11/16/98 | Task Team Leader: Rapeepun Jaisaard
Country Director: Yukon Huang | Sector Manager: Geoffrey Fox
Project ID: CN-PE- 49665 Sector: Agriculture | Program Obj. Category: Environmentally Sustainable Development
Lending Instrument: Specific Investment Loan | Program of Targeted Intervention: [ ] Yes [X] No

Project Financing Data [x] **Loan** [x] **Credit** [ ] **Guarantee** [ ] **Other [Specify]**

For Loans/Credits/Others:

Amount (US$M/SDRM): Loan 90 Million plus Credit 30 Million SDR equivalent
Proposed terms: [ ] Multicurrency [X] Single currency, specify USD
Loan: Grace period (years): 5 L/10 Cr [ ] Standard Variable [ ] Fixed [X] LIBOR-based
Years to maturity: 20 L/35 Cr
Commitment fee: 0.75% L/0.5% Cr
Service charge: 0.75% Credit
Credit:
Financing plan (US$M):

Source	Local	Foreign	Total
Government	79.8	0.0	79.8
IBRD	26.4	63.6	90.0
IDA	0.0	30.0	30.0
Commercial Banks and Farmers	40.0	0.0	40.0
Total	146.2	93.6	239.8

Borrower: People's Republic of China
Responsible agency: Sichuan Provincial Planning Commission

Estimated disbursements (Bank FY/US$M):	1999	2000	2001	2002	2003	2004	2005
Annual	10.8	15.6	24.0	24.0	24.0	15.6	6.0
Cumulative	10.8	26.4	50.4	74.4	98.4	114.0	120.0

Project implementation period: 5 years Expected effectiveness date: 02/99 Expected closing date: 12/31/2004

A: Project Development Objective

1. Project development objective and key performance indicators (see Annex 1):

The project would support the Sichuan Government's policy of developing the Anning Valley. The project would cover 15 counties within Liangshan Prefecture and Panzhihua Municipality. The area has high potential for agricultural development, because there are large areas of marginal land whose productivity could be markedly increased in the generally good climatic conditions. The project aims to increase the production, productivity, marketability and value-added of agriculture, horticulture and animal husbandry in the area, with the particular further objective of reducing the poverty of farmers in remote areas. These objectives would be achieved through: (a) supplying additional and more reliable water for irrigation (also industrial and urban use), (b) developing land and technology for grain and vegetable production, (c) developing marginal hilly land for fruit orchards, (d) improving sericulture technology, (e) improving farmer income by introducing new varieties and technologies for livestock production and (f) adding value to crop and livestock production through processing. The project would foster the effective use of existing natural resources, promote the development of mountainous areas, encourage the participation of women in production and improve the environment and reduce soil erosion.

Key performance indicators are as follows: (a) area of marginal land developed and supplied with irrigation water, (b) increased yield and production of crop and livestock, (c) higher cropping intensity index, (d) more varieties and forms of crop and livestock produced and processed according to market demand, (e) increase in average household income, (f) reduction of rural unemployment, (g) effective management of the river basin committee, (h) increase in area of land terracing and fruit tree planting, (i) percentage of poor minority households and (j) percentage of women participating in the project.

B: Strategic Context

1. Sector-related Country Assistance Strategy (CAS) goal supported by the project (see Annex 1):

CAS document number: 16321-CHA Date of latest full CAS discussion: March 18, 1997
Progress Report was discussed May 28, 1998

The proposed project would be consistent with the Bank's overall assistance strategy for China, which includes the intensification of agricultural development, while at the same time addressing regional disparities and environmental sustainability. It specifically would address two of the four principal focus areas for Bank assistance: poverty alleviation and environmental protection. The project also would respond positively to the assistance strategy identified in the 1997 CAS to accelerate commercialization of agriculture, develop new income generating activities and promote better utilization of marginal agricultural lands through the introduction of improved, sustainable production technologies.

2. Main sector issues and Government strategy:

- Productive land for agriculture production is limited due to population increase and urbanization. Government strategy to ameliorate this is to develop marginal land for agriculture. However, the development of marginal land requires significant investment.

- Development of water resources is important for both irrigation and urban uses. Irrigation is an important input to increasing agriculture productivity. Improved water resource management is crucial for equitable water allocation. It is important to introduce adequate procedures and properly fund operation and maintenance of water delivery infrastructure facilities. Water charges for irrigation and bulk supplies for municipal consumption, industrial uses and electricity generation must be high enough to pay for recurrent O&M costs and where possible a reasonable portion of the capital cost.

- Raising agricultural productivity in grain and livestock is essential to meet increased demands for food and feed emanating from population and income growth. Research and extension for developing and disseminating appropriate technologies and new breeds is important but largely non-self-funding and, due to the operation of actual budget allocations, it is seriously underfunded.

- Incremental small ruminant production can significantly increase farm income, especially for poor families. However, over-extended grazing can bring about soil degradation. In the project area, there is very limited understanding of, or support for, grazing monitoring and pasture development.

- The existence of poor areas and wide regional income disparities are major social issues. The government has special programs to target poor populations in remote regions, but funding is limited for those programs. Integrated agricultural development projects have therefore been the primary approach.

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

- Support the reclamation and development of marginal lands and introduce high value crops and improved technologies to justify the cost of development.
- Reduce the infrastructural constraints in the supply of water for multi-sectoral uses and bring about appropriate organizational arrangements for river basin water resources planning and management; improve operation and maintenance programs and develop a system to review and update water charges.
- Increase the productivity of currently cultivated lands through reliable, adequate water supply and timely application of improved agricultural inputs, including new seed and seedling varieties.
- Support agricultural and livestock research and extension adapted to the project area.
- Increase the quality and the quantity of livestock production and introduce new technologies for increasing feed production, enhancing the nutritional value of feed and promoting sustainable pastures.
- Increase the value-added of farm output by investing in agro-processing facilities and technologies.
- Ensure that there are forward and backward linkages among the production, processing and marketing of all agricultural production components under the project.

C: Project Description Summary

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

Component	Category	Cost Incl. Contingencies (US$M)	% of Total	Bank-financing (US$M)	% of Bank-financing
(a) Water Resource Development	Physical	105.5	44	47.2	43
(b) Crop Development	Physical	35.6	15	15.6	13
(c) Orchard Development	Physical	36.3	15	22.8	18
(d) Sericulture Development	Physical	26.6	11	12.3	10
(e) Livestock Development	Physical	13.3	6	8.5	6
(f) Agro-Processing	Credit	12.7	5	7.0	6
(g) Institutional Strengthening	Inst. Building	8.9	4	5.7	5
(h) Front-end-Fee	Financial	0.9		0.9	
	Total	239.8	100	120.0	50

Component Description

(a) **Water Resource Development** would have three subcomponents. The **Manshuiwan** subcomponent would comprise the construction of a weir across the Anning River and trunk, main and branch canals, which would provide water for irrigation of 14,400 ha, for domestic and industrial use and for generation of electricity. An 18 MW hydroelectric power station would also be constructed under the project. The **Huangqiao** subcomponent would construct a 68 m high dam and canal systems for irrigation of 2,680 ha. It would supply water to two small hydroelectric power stations with a total installed capacity of 640 kW. The **Shengli** subcomponent would complete the irrigation system, which would supply water from an existing reservoir for irrigation of 2,952 ha.

(b) **Crop Development** is designed to help the Sichuan Provincial Government implement its high priority objectives of increasing provincial food production and improving the lagging status of Liangshan Prefecture and Panzhihua Municipality. The focus is on the main staple grain crops (rice, wheat, and maize) and on potatoes and vegetables. The major constraints to increased production are the shortage of suitable land for these crops and a number of other inter-linked factors, such as lack of quality, improved-variety seeds and inadequate extension services. The crop development component is therefore an effort to rectify this situation through a variety of interventions, including reclamation of new land (4,700 ha), improvement of existing land (12,800 ha), multiplication of improved seed varieties (2,560 ha), improvements to the extension service, farmer and staff training, and research.

(c) **Orchard Development** aims at increasing the quality and number of varieties of high quality fruit in the project area. Development of quality fruit has been given a high priority by the Sichuan Provincial government due to the income-generation capacity of orchards, their potential for export to other areas of China, and their reduction of soil erosion commonly found in the Anning River Valley on sloping lands. The project would support the development of marginal land and the improvement of existing orchards. It would invest in the establishment 19.5 ha of budwood gardens and nurseries, (b) the development of 1,745 ha of new pomegranate, mango and longan orchards, (c) the rehabilitation of 300 ha of pomegranate orchards, (d) the construction of simple post-harvesting facilities and (e) support of training, research and extension.

(d) **Sericulture Development** aims at increasing and improving the quality and productivity of silk production by introducing new sericulture production and processing technologies to mulberry and cocoon-production households and investing in silkmoth egg grainages, young silk worm rearing centers, silk cocoon drying centers and silk reeling mills. This component has been designed to be market-driven, and project investments would be closely matched to the identified market for raw silk and cocoons. Value-added processing would be undertaken within the project area, and most cocoons produced under the project would be reeled into raw silk. Silk reeling mills would be the main point for business management. The management of the mills would identify the cocoon production areas and collection centers to be developed for their processing requirements. Most dry cocoons will be used by the mills, with a small percentage exported to other provinces.

(e) **Livestock Development** aims to increase the income of poor farm and minority-nationality households through improved livestock production. It would increase the production and productivity of sheep, goats, and ducks by improving breeds, supporting pasture and feed development, and strengthening animal husbandry and veterinary services. It would introduce rabbits as an income-generating activity for women.

(f) The **Agro-Processing** component is designed to provide essential linkages among the production, processing and marketing of farm produce and cash crops generated under the project. Project enterprises would comprise a rice processing mill, a seed processing plant, a new wholesale market, and three ventilated fruit stores. Two of these, the rice mill and the seed processing plant, would be part of a new grain-products business park to be set up on the outskirts of Xichang. A private sector food processing and

marketing company with a wide distribution network in southern China would take a majority shareholding in both the seed mill and the rice mill.

(g) The **Institutional Development** component would provide support to an Anning River Basin Water Resource Management Committee, invest in overall project management and strengthen institutional arrangements for agricultural and livestock research, extension services and environmental protection.

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

The project would support (a) institutional reform aimed at developing more effective water resources management systems, (b) adaptive research programs in crops, fruit and livestock in response to present and future problems and local needs, and (c) enterprise to move to commercial operations and pricing.

3. Benefits and target population:

Benefits: The project's major benefits are expected to be incremental agricultural production and increased rural incomes. They are to be generated from: (i) an increased and more reliable supply of water, which would irrigate 16,650 ha of existing fields, develop about 3,150 ha of marginal land, provide 396,000 m^3/day of raw water for domestic and industrial use and provide 110,000 MWh of electricity per annum; (ii) incremental production of 92,160 tons of grain, 71,250 tons of vegetables and significant quantities of other crops, through higher yields and area expansion; (iii) incremental production of 41,525 tons of high-quality fresh fruit; (iv) incremental production of 21,600 tons of meat (beef, mutton, goat and duck) and associated products (wool, hides, etc.); and (v) 560 t/y of reeled raw silks and extra 486 t/y of dried cocoon for export. Additional income would come from value-added from rice milling, fruit grading and silk reeling. Other benefits would be: (i) the positive impact of the project activities on the environment in the project area; (ii) improved planning and management of Anning River Basin water resources; (iii) demonstrated effective commercial agriculture where production depends on market demand; and (iv) improved research and extension.

Target Population: The project would directly increase the incomes and employment of about 264,700 families and indirectly benefit over 0.5 million additional households. Newly reclaimed land would be allocated to poor farmers in Liangshan and Panzhihua. Their average income is now Y 880 ($106) and would be increased to Y 1,825 ($220) in Liangshan and Y 1,892 ($228) in Panzhihua. Among the project households, 26,225 are Yi and other minority households who are now living below the poverty line. Of these households, 47 percent have an annual income below Y 500 ($60) and 27 percent have an annual income below Y 380 ($46). Only 26 percent on the target group have incomes close to or above the already low average income in the project area. Eighty percent of small-livestock, vegetable, and silk-cocoon production would be carried out by women.

4. Institutional and implementation arrangements:

Period of Implementation. The project would be implemented over a five-year period from FY99-04. Project effectiveness is expected to be by February 1, 1999 and the mid-term review would be by June 30, 2001. The project is expected to be completed by December 31, 2003 and the closing date would be December 31, 2004.

Institutional and implementation arrangements. The integrated agricultural development approach will be applied to this project. The project would be managed by the Government of Sichuan Province through Project Leading Groups (PLGs) and Project Management Offices (PMOs) at provincial, prefecture and county levels. The PLGs, which would include representatives of technical bureaus, the Women's Federation, the Poverty Alleviation Office and the Nationalities Affairs Commission would provide guidance to the PMOs on project coordination and the resolution of project implementation

issues. Representatives from ACWFs and the task force for minority nationality development would assist the township PMOs and the village committees in selecting the project beneficiaries and monitoring the participation of poor farmers, minority people and women. The Scientific and Technical Committee (STC) set up under the project would give overall guidance on the technical aspects of the agricultural, horticultural and livestock production components. This would ensure that appropriate technologies would be used in both development and production and that the quality of crop, fruit and livestock production is maintained.

The Anning River Basin Water Resource Management Committee established under the project would be charged with overseeing water allocation strategy for the basin. This strategy would be underpinned by spatial plans, pricing policies, water rights systems and real-time water management operations. The committee would be designed to allow a wide range of stakeholders to participate in the water allocation and water management decision-making process. The Manshuiwan subcomponent under the project would be implemented by the Daqiao Hydroelectric Development Corporation (DHDC) which is owned by the Provincial Water Resources Bureau. Under the project DHDC would be responsible for preparing and executing tenders for civil works, goods and services and for installing plant and equipment. It would retain the Sichuan Water Conservancy and Hydroelectric Design and Research Institute of the Water Conservancy Bureau of Chengdu to complete designs, execute design changes. The on-site engineer for construction supervision would be contracted upon completion of a competitive selection process in which at least four qualified firms/institutes will participate. DHDC would also be responsible for Operation and Maintenance (O&M) of infrastructure and facilities following project implementation.

The Hydroelectric Bureau of Panzhihua City would be responsible for the implementation of the Shengli sub-component. It would select and employ, through a competitive process, an enterprise to assist with construction supervision, contract administration and quality control of the major works, including main and branch canals and lateral canals serving areas larger than 10,000 mu (667 ha). The Hydroelectric and Farm Machinery Bureau of Renhe District would be responsible for the implementation of the subbranch or lateral canals. It would coordinate the design and implementation of these works with the Hydroelectric Bureau of Panzhihua and the beneficiaries. These works would be constructed with the participation of the farming communities benefiting from the provision of irrigation. Construction of field ditches would be undertaken entirely by farmers.

The Huangqiao Construction Office (HCO) has been established for the Huangqiao Subcomponent. It would oversee the implementation of the major infrastructure works, including the dam and branch canals. The Hydroelectric Bureau of Miyi County would have primary responsibility for the implementation of laterals and sublaterals. The HCO would be staffed with qualified personnel from relevant county offices. The Hydropower Bureau of Miyi County would be the lead agency. HCO would retain the Sichuan Hydraulic Science Institute (SHSI) to oversee design changes during construction and select and contract an independent engineering enterprise as the "engineer" for the construction of works. The laterals and sublaterals would be constructed with significant participation (40-50 percent of the cost) of the farming communities benefiting from the provision of irrigation. Construction of field ditches would be undertaken entirely by farmers.

The Huangqiao Reservoir Management Bureau would be responsible for the O&M of the infrastructure facilities. It initial activities would be the preparation of O&M procedures, manuals, organizational structures and staffing. A management committee of representatives of the benefiting villages and townships would also be established to work closely with the Management Bureau. It will have a key role in preparing annual water allocation plans and in overseeing the collection and spending of the water charges. In addition, committee for managing O&M would be established at township and village levels. Those committees would be responsible for planning and implementing the O&M activities of the sublaterals and ditches. They would contract for irrigation water supplies each year in accordance with the demand projections and water charges sanctioned by the Panzhihua City.

The land improvement for crop, fruit and vegetables would be planned, designed and implemented by the Bureau of Agriculture in Liangshan and Panzhihua for the grain subcomponent and the Vegetable Office in the Municipal Administration of Panzhihua for the vegetable subcomponent. The livestock development component would be implemented by the township government and village committees in cooperation with the Animal Husbandry Bureau. The Prefecture and County Animal Husbandry Bureaus would provide technical guidelines and support to the local governments. Under the township government, there will be village implementation teams who will work closely with village heads and farmers. The implementation of the crop, fruit and livestock sub-components would strictly followed the agreed technical standards and the minority nationality development plan.

Agro-processing plants would be managed on a commercial basis with managers responsible for profit and loss. All activities related to project construction, processing, storage and marketing would be the responsibility of the concerned processing company. Each company would also be responsible for the day to day running of the project, and for reporting progress to the PPMO. The manager of the processing company would have total authority over the relevant project component, and full responsibility for it's successful implementation. The PMO would be a facilitating agency, providing the Processing Companies with access to all relevant Government agencies, and reporting project progress to the PPMO. The above project management structure is already in place.

Financial Arrangements

Financial Management. The Financial Management Systems (FMS) to be used during project implementation were reviewed and found to be acceptable. The Provincial Bureau of Finance has been managing several World Bank projects in Sichuan Province, and regulations and procedures are consequently already in place. BOF is using the guidelines the Ministry of Finance developed in cooperation with the World Bank for financial management, accounting control, financial reports. The PMOs at provincial, prefecture/municipal and county levels have qualified and experienced staff to produce reliable accounts on project activities in a timely manner. The FMS indicated (a) a clear lines of authority and responsibility between the PMO Chief, the Finance Division Chief, project accountants, disbursement officers and cashiers; (b) clear procedures for financial management, accounting control and auditing; (c) clear procedures for special account management; (d) standardized procedures for filing supporting documents for Statements of Expenditures; and (e) systematic record keeping on the source and use of counterpart funds. These procedures are found to be acceptable. The PMO have also prepared financial reporting tables to be used at all levels as follows: (a) summary of sources and uses of funds; (b) physical and financial completion by component; (c) project expenditure forecast; (d) special account reconciliation statement; (e) statement of the withdrawals from the Loan/Credit; (f) procurement of goods, works and services; (g) implementation of training programs; (h) cost variance report; (i) unit variance report; (j)consultants (for contracts requiring prior review); (k) expenditures report for consultants; and (l) special account statement. These tables could be found in the PIP. Since financial management system is in place and staff has extensive experience from implementing the existing Sichuan ADP, the action plan for this respect has not been developed.

On-Lending. The following on-lending arrangements have been agreed. MOF would on-lend the Loan to the Sichuan Government on terms and conditions as received from the Bank (5 year grace and 20 year maturity). MOF would on-lend the Credit on the same terms and conditions as received from IDA, with the exception that the grace period would be reduced to 5 years and maturity period to 17 years, in line with MOF's expectation that it will soon be asked by IDA to accelerate repayments. The Provincial Government indicated that it will on-lend these funds to the prefecture and municipal governments at the terms and rates received from MOF. The foreign exchange risk would be borne by the prefecture and municipal governments.

Auditing. Project account would be audited annually by an independent auditor acceptable to the Bank. In the PMOs at all levels, there will be a financial unit, which will be responsible for accounting operation of the projects and keep all invoices, receipts and accounting documents and subject to the auditing

agencies at same or higher levels. The Sichuan Provincial Audit Administration would be responsible for auditing of all accounts of the projects and submit the audit report to the Bank. The audit report would be submitted to the Bank with in six months in the following fiscal year. The audited accounts will include the detailed statements of the amount drawn from the account of Loan/Credit against the statement of expenditures and the comments made by the auditors on whether the amount drawn for the rational expenditure could be reimbursed by the Bank.

Supervision, Monitoring, Evaluation and Reporting. The project management offices at all levels would monitor project progress. The task force for minority nationality and staff from the Women's Federation would participate in this effort. Regular supervision would be carried out to assess the physical, technical and financial aspects of the project. Monitoring indicators including performance indicators (as in the PIP) would be used to evaluate progress under the project. A progress report would be produced and sent to the Bank Group every six months, by September 1 of each year for the preceding January-June and by March 1 for the preceding July-December. A mid-term review would be undertaken by June 30, 2001. The PPMO would make broad assessment of the project implementation in a draft project completion report to be submitted to the Bank Group no later than six months following the completion of the Credit/Loan disbursement.

D: Project Rationale

1. Project alternatives considered and reasons for rejection:

- Various alternative technical solutions under the Water Resources Component for the location of the Manshuiwan headwork's and major hydraulic structures on the proposed water supply systems of the three subcomponents have been evaluated technically and economically. The most attractive solutions were selected.

- Initial project proposals consisted of independently planned and loosely structured project components. This project design alternative was rejected. Instead an approach was adopted that integrates infrastructure investment, land development, and improvement of agricultural support services.

- Several agro-processing subcomponents were rejected due to unclear linkages between the production and marketing, including lack of market demand. To ensure that production conforms to demand, the approach adopted for this project is to identify market demand first and then specify production and processing activities to meet it.

- Proposed feedmill construction was considered non-essential due to the number of existing commercial mills in the project area, and the proposed investments were consequently rejected.

- The alternative of introducing sheep raising as a substitute for goat production in fragile mountainous areas with the objective of reducing soil erosion was selected.

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

Sector issue	Project	Latest Supervision (Form 590) Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
Bank-financed			
To increase agricultural production through the expansion of irrigated land and crop diversification, to expand soil conservation measures to improve productivity of eroded areas.	Sichuan Agricultural Development Project (Cr. 2411-CHA)	S	S
To increase farmer incomes and agricultural production through provision of additional irrigation water, alleviation of soil salinity and water-logging, development of wasteland for agriculture and horticulture, and investment in agro-processing facilities.	Henan Agriculture Development Project (Cr. 2242-CHA)	S	S
To increase agricultural production and rural incomes through the improvement and expansion of irrigation and drainage facilities, the development of unutilized wastelands, the strengthening of agriculture and livestock support services, and the restoration of the natural ecology.	Tarim Basin Project I (Cr. 2294-CHA) Closed 12/31/1997	S	S
To ameliorate poverty and increase agricultural production by rehabilitating and expanding existing irrigation and drainage systems and strengthening agricultural support services.	Irrigated Agriculture Intensification Project (Cr. 2256-CHA and Ln. 3337-CHA) Closed 06/30/1997	HS	HS
To increase agricultural production, farm incomes, rural employment and women's participation by increasing the production, productivity and marketability of crop, fruit, livestock and aquatic products.	Songliao Plain Agricultural Development Project (Cr. 2571-CHA)	S	S

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

3. Lessons learned and reflected in the project design:

The Bank has heavily supported agricultural development, water resources and irrigation and drainage development projects in China. The outcome of these projects has generally been successful, with efficient implementation, limited time and cost overruns despite periods of sharp price escalation, and rates of return that have equaled or exceeded appraisal estimates.

Key lessons learned from completed and ongoing ADP and water resources projects adopted during the preparation of this project are as follows: (a) seek active participation of beneficiaries from the initial project formulation stage, maintain their interest in order to increase the effectiveness of project implementation; (b) agree on detailed organizational and staffing arrangements and detailed job descriptions before implementation; (c) establish baseline data of key performance indicators for all components; (d) plan to provide training to the provincial and local technical staff participating in the project; (e) ensure availability of local funds and counterpart funding plans; (f) include adequate cost recovery from beneficiaries of productive project investments in the design of the project; and (g) focus on resolving procurement and disbursement issues during the initial supervision missions.

Key lessons learned from other projects for the agro-processing component which are reflected in the design of this project are as follows: (a) adopt demand-driven approach instead of the supply-driven approach proposed; (b) use technically advanced equipment and processes to increase efficiency and value-added to final products; (c) adopt commercial operations with improved structure and management; (d) expand facilities at existing agro-processing sites, a far more successful practice than setting up new processing companies; (e) locate the processing plants near to the production base; (f) use national standards for quality of processing buildings and review adherence regularly during construction; and (g) use specialist assistance to prepare technical specifications for processing equipment to ensure that processing lines are procured as a single procurement package with supplies of spare parts, training and after-sale services incorporated.

4. Indications of borrower commitment and ownership:

A clear indication of the borrower's commitment is demonstrated by: (a) the spending of substantial local funds on the construction of dams, in particular, on the completed Shengli Dam and the ongoing, relatively large Daqiao Storage Facility on the upstream stem of the Anning River, (b) the preparation of a water resources development plan for the entire Anning River Basin in 1991, (c) completed feasibility studies of high priority water resources development subprojects (these studies provide the basis for optimizing the use of the available water resources in the Anning River Basin), (d) the recent approval of this project by the State Council, (e) the establishment of project leading groups and project management offices at all levels and the provision of budget for project preparation, and (f) the commitment in governmental budgets for counterpart funding for project implementation.

5. Value added of Bank support in this project:

Because of its involvement and cross-Sectoral experience with ADPs, hydro-power, water resources and water supply operations, the Bank has expertise to guide China with planning and implementing measures to: (i) establish an integrated water resources management system; (ii) modernize existing infrastructure; (iii) introduce new and appropriate production and processing technologies; (iv) introduce new crop varieties and cultivation practices; and (v) protect and improve the environment. Bank participation in the Anning Valley ADP will add value to the Borrower's efforts to: (i) institute reforms aimed at developing more effective water resources management systems; (ii) promote efficient use of limited water and land resources, greater crop diversification and increased agricultural production; (iii) introduce appropriate new production and processing technologies; (iv) promote better production and processing management to enable producers to respond to market demand; (v) provide knowledge of commercial agricultural production and marketing; and (vi) introduce environmental standards in the design of agro-processing plants through the development of effluent monitoring systems and environmental protection practices.

E: Summary Project Analysis (Detailed assessments are in the project file)

1. Economic (supported by Annex 4):

Cost-Benefit Analysis : NPV=Y1.6 billion; ERR= 25%

Economic analyses have been carried out for all components (water resource, crop, orchard, livestock, sericulture and agro-processing) and for the project as a whole. The results of the analyses show that the project has acceptable economic rates of return (ERR) for all subcomponents and for the project as a whole. The ERR for the Water Resource Development Component is estimated at 17 percent. Investment in grain and vegetable development shows a high ERR of 39 percent. The project would enable substantial incremental yield and production from double cropping and the high value of vegetables. Investment in orchard development has an ERR of 30 percent, lower than for grain production, since the initial investment in orchard development is higher than for grain and benefits are delayed. This ERR is similar to those for comparable investments in orchards in other projects. The livestock ERR is estimated at 19 percent, a rate which is lower than for crop and orchard development but acceptable for household livestock production. Sericulture and other agro-processing components show ERRs of 29 percent and 20 percent, respectively. The project as a whole has an ERR of 25 percent and the net present value at a 12 percent discount rate of Y 1.6 billion.

2. Financial (see Annex 5): NPV = Y 0.8 billion; FRR = 18 %

Financial analysis was carried out based on one hectare models for crop and orchard development components. A livestock model was used for the livestock development component. The results of the analysis for subcomponents show FRRs ranged from 26 to 52 percent. The Manshuiwan, Huangqiao and Shengli subcomponents in the Water Resource Development component have FRRs of 14, 17 and 27 percent, respectively. The financial analysis for crop production shows the FRR of 42 percent for Liangshan and 34 percent for Panzhihua. Investment in land improvement yields higher FRR than investment in new reclaimed land in both project prefectures. The orchard development component shows FRRs ranging from 19 percent to 49 percent for new orchards and 61 percent for rehabilitated orchards. These FRRs vary with these ranges, depending on type of fruit, irrigation mode and difficulty of proposed land development. The variation in benefits also depends on the type of fruit; for example, mango has lower benefits than longan and pomegranate. In livestock development component, the analysis shows high FRRs for wool sheep (45 percent) and rabbits (37 percent), due to the high value of the products. The FRR for goat production is estimated at 42 percent, higher than most of the other livestock operations, due to the low cost of production. Financial analysis has been undertaken for cocoon production sub-component; the FRRs for silkworm egg grainage, young worm households, and cocoon raising households are estimated at 22, 18 and 33 percent, respectively. Financial analysis has been undertaken for each enterprise in the sericulture and agro-processing components. The FRRs ranged from 19 to 49 percent. Total FRR for the project is estimated at 18 percent.

Fiscal impact: The total incremental recurrent budget required to keep the project activities in operations at the same level of efficiency following the loan disbursement period is estimated at Y 122 million (US$14.7 million) annually. Government revenue will increase by Y 175 million (US$21 million) mainly from four different sources; (i) increased water charges, (ii) agricultural tax on incremental agricultural production; (iii) incremental community development fund and (iv) land lease taxes collected on all improved land and reclaimed land. The impact would be positive at Y 53 million (US$6.4 million)

3. Technical:

The technical features of the water resources development component have been planned and designed based on sound engineering standards and procedures. The planning, design, and formulation of plans for construction, operation and maintenance of the infrastructure to be realized under the project have benefited from the participation of project beneficiaries. The design and implementation of the lower-end irrigation delivery systems will be fine-tuned during project implementation, and assurances will be

obtained that the sublateral and tertiary system requirements adequately reflect organizational arrangements at the township and village levels. Technical assessments of the water resources component have focused on the following aspects: (i) cost effectiveness of the proposed technical solutions for providing water for irrigation and other uses; (ii) sufficiency of water supply and demand analysis to ensure adequate availability of water for proposed crops and areas to be irrigated and for planned industrial and domestic use; (iii) adequacy of planning and design parameters of the irrigation and drainage systems, including the lateral and tertiary canal systems, which aim at achieving equitable water distribution and efficient water use; (iv) appropriateness of land improvement and on-farm works to allow adoption of modern, efficient on-farm water management methodologies and agricultural practices; (v) full review of safety aspects of existing dams and those under construction and planned, in view of their key role in supplying water to the project areas; (vi) effective institutional arrangements to guide water resources management in the Anning River Basin; and (vii) adequacy of operation and maintenance arrangements and appropriateness of water charges. Those aspects were reviewed during project preparation and found to be technically sound. Well qualified and experienced technical staff of the implementing agencies, together with technical assistant from third parties and the Bank, would continue to assess the adequacy of technical aspects during project implementation.

The Sichuan Water Conservancy Bureau (SWCB) appointed a Dam Safety Review Panel (DSRP) of experts in 1997. The DSRP undertook the first review of existing Shengli, Yuejin, and Pingdi dams on the Yizi river, the Daqiao dam under construction on the Anning river, the planned Huangqiao dam on the Caochang river in Miyi county and the planned Manshuiwan weir on the Anning river in Mianning county in October/November 1997. The review concluded that existing dams were designed and constructed satisfactorily. However, a monitoring program and a number of remedial measures were recommended for the existing Yuejin and Pingdi dams built in cascade on the Yizi river upstream of the Shengli dam. These measures would be implemented under the project. No major issues were identified with the ongoing construction of the Daqiao dam and the planning and design features of the Huangqiao dam.

The project would draw on the crop, fruit and livestock production skills and experience of the relevant technical bureaus and research institutes. Crop technologies would be based on new improved varieties, efficient use of inputs, balanced use of chemicals and natural nutrients to improve soil fertility, optimum use of land and water, and introduction of double and relay cropping. Horticulture technologies would be based on the experience of the recently completed Mid-Yangtze ADP. This experience pertains to the introduction of new fruit varieties, virus-free seedlings, standards for the development of marginal lands into quality orchards, inter-cropping among the fruit trees, tree maintenance, fruit harvesting, and post-harvest technologies. The livestock component would emphasize new improved livestock breeds (specifically for meat or wool or both), feed and pasture development, AI technology, and veterinary services. It would also incorporate the successful design used by Heifer Project International. The Scientific and Technical Committee (STC) set up under the project would set technical standards, review proposals for the project, coordinate the technical aspects of the project, resolve technical problems, and provide quality control. The implementation of the crop, fruit, sericulture, and livestock components would strictly follow these agreed technical standards.

New production and processing technologies would be introduced under the sericulture and agro-processing components. In the sericulture component, the project aims to improve quality of silk from grade 2A to grade 4A by introducing improved production and processing technologies at all levels starting from mulberry production, silk moth egg production, young silk worm rearing, cocoon production at the household level to drying facilities and technologies, and silk reeling technologies. Other agro-processing technologies would be based on efficient equipment and improved grades and standards, both of which would produce high quality final products for the high end of the markets and for export.

4. Institutional:

(a) Executing agencies

The Provincial Government, through the Provincial Project Management Office (PPMO) in the Planning Commission, the Provincial Water Conservancy Bureau and the Provincial Technical Bureaus, would oversee the implementation of all the components under the project. These provincial agencies have extensive experience with planning, design and implementation of large-scale projects. They also have experience in implementing the other World Bank projects in the province.

(b) Project management

The PPMO has extensive experience in managing internationally-financed projects. Staff is well trained and the office is well equipped to manage this project. The PPMO has separate units to handle planning and management, procurement, disbursement, and monitoring and evaluation. The Liangshan Prefecture and the Panzhihua Municipality have recently set up corresponding units in their project management offices. The county PMOs has established offices with staff from county planning, finance and technical bureaus. The county PMOs will oversee project implementation at the township and village levels. Staff from the PPMO would train staff from the prefecture and county units.

The water resources development component in Liangshan would be implemented by the Daqiao Hydroelectric Development Corporation (DHDC) which was established in 1996 specifically for managing the implementation, operation and maintenance of the Daqiao Dam and associated facilities for irrigation, power and bulk water supply. The DHDC is appropriately staffed with engineers and officials from the Water Conservancy Bureau, who have extensive experience in constructing dams, managing water distribution and overseeing operation and maintenance of facilities. It would also coordinate project matters with local government agencies and project beneficiaries. The Huangqiao and Shengli subcomponents would be implemented by county water resource agencies, with the participation of other relevant local government agencies including the Management Committees, who will represent water users.

5. Social:

(a) **Resettlement**. The water resources development component under the project entails acquisition of land for the construction of the Manshuiwan weir and canal system and the Huangqiao dam and the resettlement of those affected. To mitigate the adverse impacts of these project works, comprehensive detailed actions plans have been prepared for the resettlement and compensation requirements of those affected under both subcomponents. The main objective of the resulting Resettlement Action Plan (RAP) is that both resettlers and host population affected will not be disadvantaged by the project and their living standard be improved or at least restored. Resettled families will be moved to locations benefiting from the project, where their house and amenities will be improved. Their new earning potential will be at least as good as previously and income losses during the transition period will be compensated for. The RAPs, which the Bank found satisfactory, include: (i) detailed surveys results of people and assets affected; (ii) legal framework for land acquisition and compensation requirements; (iii) institutional arrangements; (iv) cost details and budget requirements; (v) implementation schedule; (vi) participation, consultation and grievance procedures; and (vii) monitoring and evaluation by the project and an independent external group.

Involuntary resettlement is required because of the construction of the weir and main canal systems under the Manshuiwan subcomponent in Mianning County and the Huangqiao dam in Miyi County. Detailed surveys carried out by local governments determined that 1,506 people are required to be resettled: 874 under Manshuiwan and 632 under the Huangqiao subcomponents. In addition 1,132 people under the Manshuiwan subcomponent are to lose land needed for the construction of works. The total cost of resettlement amounts to Yuan 65.1 million (Yuan 53.0 million under Manshuiwan and Yuan 12.1 million

under the Huangqiao subcomponents). The provincial and local governments will fully fund the resettlement costs. The Provincial PMO will oversee the monitoring of the implementation of the agreed RAPs. Actual monitoring will be carried out by local government agencies, who will prepare periodic progress reports on physical and financial progress. In addition, independent monitoring of the implementation of both RAPs will be carried out by the Chengdu Hydroelectric Investigation and Design Institute of the Ministry of Energy of the Central Government. They will review physical progress, Project Affected People (PAP) livelihood restoration, PAP participation, grievances and effectiveness of the grievance procedures, and proposed measures for improvement. A detailed Resettlement Action Plan is in the Project File.

Land used for the development of agro-processing plants would be commercial development land, which does not currently have any occupants or dwellings. In the event that processing sites would be located on farmland, crop compensation and relocation expenses would be paid to farmers, with the amount dependent, in line with local regulations, on the value of the current crop being produced. If there is any additional resettlement required under the project, it would be carried out according to a Resettlement Action Plan (RAP) approved by the Bank and designed on the basis of policies and principles acceptable to the Bank.

(b) **Social Impact**. The project would aim to improve the quality of life of poor households in the project area, with special emphasis on minority communities and women. The criteria for selecting project beneficiaries were established. The duration of land use right were developed. During project implementation, special attention would be paid to ensuring that benefits are directed towards these households. (See Project Implementation Plan)

(c) **Social Assessment**. A social assessment was undertaken in the proposed project. In 1996, the 15 administrative areas included in the Project had a total population of 3.5 million (1.62 million in Liangshan Prefecture and 0.88 million in Panzhihua Municipality). The minority population accounted for 35 percent in Liangshan and 12 percent in Panzhihua. The majority of the minority population are Yi who live in remote areas. The Yi's methods of production are crude, their standard of living is very low, and to a large extent they still preserve their traditional way of life, which separate them from the surrounding Han. Even so, the economy of the Yi areas is beginning to move from a subsistence to a commodity economy and from a very simple to a more complex economic organization. The Project targets the Yi as one of the groups that derive important benefits from the project. They would be beneficiaries of the crop and livestock components, which according to the assessment, are socially and culturally compatible with their existing way of life. Participation in the project would provide the financial benefits and improve the social and political status of this minority. A summary of the Social Assessment is in the Project File.

(d) The Minority Nationality Development Plan (MNDP) provides comprehensive information on the development programs to be carried out under the project and also provides information on government programs assisting the poor and minorities. The project would ensure that a high proportion of minority nationality people would be selected to be project participants. They will benefit from the project's investment and the technical, market and social training provided as project activities. The programs would be specially designed to take into consideration their social, cultural and language situation. The existing community development programs, financed by the government, which include education (Yi language, adult literacy), water supply and health and have been carried out in the project area since 1987, are complimentary to the project's programs, and will be continued for several more years (at least until 2002). These will greatly help the development of this poor area. Assurances were sought at negotiations that the MNDP be implemented under the project. The MNDP can be found in the Project File.

6. Environmental assessment: Environmental Category [ ] A [X] B [ ] C

In general terms the project is expected to make a positive impact on the environment. It would make an important contribution to improved sanitary conditions by providing good quality water to rural and urban

areas. Irrigation water would be delivered to currently rainfed areas and the marginal lands that would be reclaimed under the project. The supply of irrigation water would reduce the ill effects of droughts. Fruit tree planting would help to reduce soil erosion and maintain watersheds. Terracing and contouring of land for orchard development would also reduce soil erosion and demonstrate future development models for land with steep slopes. Introducing new pasture development and management practices would help to reverse the accelerating grassland deterioration.

The project is designated a "B" category project, because the project is expected to have minimal negative environmental impacts. While most of the proposed infrastructure works will be "new" works, they will be built in areas already significantly affected by human activities. About 15 percent (3,150 ha) of land to be reclaimed under the project would be located in environmentally fragile areas. The canal systems to be constructed in the Shengli and Huangqiao subcomponents would run through areas with steep slopes and, in some places, severe soil erosion. Special care would be taken during the construction of canals and terracing in these areas. Soil erosion on steep slopes would be reduced through terracing and the planting of fruit trees. Required mitigation measures are included in the construction costs for these works.

The agro-processing plants proposed under the project are of types not expected to create major potential environmental damage. All plans for processing plants would be required to include an environmental assessment to identify potential pollutants and propose mitigation measures. Wastewater treatment would be incorporated in the design of the project's agro-processing plants, and plans would be developed to monitor performance.

7. Participatory approach:

(a) Primary beneficiaries and other affected groups:

The primary beneficiaries of the project are poor farmers in the 15 counties of the Liangshan and Panzhihua Prefectures, who are predominantly of Yi nationality. During project preparation, representatives of the Nationalities Affairs Commission, Poverty Alleviation Office and All China's Women Federation were invited to be members of the Project Leading Group (PLG). The mayor of Liangshan Prefecture, who is a member of the Liangshan PLG, is of Yi nationality. These groups actively participated in the site visits of Bank missions and the discussions they had with technical staff, officials and farmers. The design of each project component reflects the needs and ideas of the beneficiaries. Their representatives would also oversee project implementation to ensure that the target beneficiaries are equitably chosen and that the project is carried out to meet its objectives.

In the water resource development component, the Water Resources Management Committee would bring together all stakeholders, government and non-government alike, with interests in the water resources management of the Anning River Basin. This committee would provide policy guidance in allocation matters and guidelines for achieving quantity and quality objectives. The component would apply a participatory approach to the planning, design, implementation and O&M of the three subcomponents. Throughout this process, beneficiaries of irrigation would be consulted and kept informed about the status of the project. The Management Committee would also organize benefiting villages and townships to undertake the O&M activities of the sublaterals and ditches.

(b) Other key stakeholders:

Others key stakeholders are the technical and scientific communities. These groups have been involved in the project since identification and have representatives on the project's Scientific and Technical Committee, which will review, supervise and monitor progress made under the project. The others are the government entities at provincial, county and prefecture levels. Each level has its own PMOs and thus has the facility to fully participate in the Project.

F: Sustainability and Risks

1. Sustainability:

Project sustainability will depend on: (a) effective project management arrangements to ensure high quality project formulation, preparation and implementation; (b) success of the Anning River Basin Water Resource Management Committee in drawing comprehensive planning and management of available water resources, adequate cost recovery and environmental protection; (c) effective participation of beneficiaries in the operation and maintenance of water delivery systems and adequate O&M funding through enforcement of effective cost-recovery arrangements; (d) sufficient supply of reliable, good-quality water and agricultural support services; (e) satisfactory financial arrangements for counterpart funding and working capital, and (f) adequate local government support for road, rail, communications and other infrastructure. These elements have been incorporated in the project design to ensure the sustainability of the project.

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

Risk	Risk Rating	Risk Minimization Measure
Annex 1, cell "from Outputs to Objective"		
• Delayed completion of Daqiao Dam, lateral canals and on-farm works	S	Obtain commitment from Government to provide adequate funding for timely completion
• Delayed or no introduction of new crop and fruit varieties	M	Ensure effective extension services, including adequate supply of new planting material
• Poor households are not benefiting from livestock component	M	Effective project supervision by PMO and Bank
• Marginal or no improvement in quality of silk	M	Education and training of raw silk producers and staff of processing plants
• Less than projected return from agro-business processing	M	Ensure proper plant management, installation of modern processing technology and expansion of markets
• Inadequate cost recovery to sustain O&M of water supply infrastructure works for irrigation and domestic use	M	Ensure efficient and cost-effective O&M practices through provision of training of O&M staff and farmers
• No reduction in soil erosion in hilly areas	M	Ensure sound engineering standards for building of terraces, through strict supervision and training
Annex 1, cell "from Components to Outputs"		
• Ineffective administrative support and insufficient counterpart funding	M	Regular and effective supervision by Bank and obtain commitment from Government to provide funds as projected

• Poor quality implementation of project infrastructure works	M	Ensure good quality construction supervision and enforcement of adequate engineering standards
• Unsatisfactory coordination of local government agencies	S	Enforcement of organizational coordination arrangements and provision of training
• Farmers are not motivated to adopt project recommendations	M	Effective extension services, including training
• Markets are not available for project produce and prices are lower than projected	M	Ensure effective market development programs and removal of transport and possible other constraints
• Unsatisfactory adoption of new crop varieties and production technologies	M	Ensure effective agricultural support services
• Inadequate adoption of improved silk processing technologies	M	Training, technical assistance and development of incentive programs
Overall Risk Rating	M	

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

3. Possible Controversial Aspects:

Possible conflict could occur between the water conservancy and agriculture bureaus in implementing the components involving conversion of marginal lands into productive lands. Functions and responsibilities would be clearly defined and cooperation between the two offices would be emphasized. To avoid this conflict, land reclamation and development is assigned to be the responsibility of the Bureau of Agriculture.

G: Main Loan Conditions

1. Effectiveness:

Standard

2. Other:

Assurances were obtained at negotiations that:

(a) The PPMO would furnish the Bank with annual work plans no later than December 1 of each year for the main infrastructure works of the Manshuiwan, Huangqiao and Shengli subcomponents.

(b) The PPMO would ensure that action plans acceptable to the Bank for carrying out of minor canal systems, land reclamation and land development programs in area of approximately 15,000 hectares under the Manshuiwan subcomponent in Liangshan Prefecture and in an area of approximately 2,700 hectares under the Huangqiao subcomponent in Miyi county would be funded adequately and carried out in a timely fashion.

(c) The PPMO would furnish the Bank with annual work plans no later than December 1 of each year for the lateral canal systems, on-farm works, and land development and land reclamation works in the Manshuiwan, Huangqiao and Shengli project areas.

(d) The PPMO would submit to the Bank annually, a status report on the collection rate of water charges, review annually the water charges for each of the three subcomponents and adjust the charges as needed to levels sufficient to cover at least the required O&M expenditures and a reasonable portion of the replacement cost.

(e) The water resource implementation agencies would prepare and furnish to the Bank no later than June 30, 2000 operation and maintenance plans for the Manshuiwan, Huangqiao and Shengli subcomponents. These plans would be put into effect as agreed with the Bank.

(f) The Sichuan Provincial Government would carry-out the remedial measures recommended by the Dam Safety Review Panel no later than June 30, 2000, including the establishment of a provincial dam safety committee and standardized dam safety surveillance procedures and reconvene the Dam Safety Panel at regular intervals to review the status of works in progress at the Huangqiao and Daqiao Dams.

(g) The Sichuan Government would provide subloans to beneficiaries on the basis of guidelines acceptable to the Bank that they are creditworthy and have the technical skills required to carry out the subprojects. Among the criteria for creditworthiness that enterprises receiving the subloans would have to meet are that their operations are technically feasible and commercially viable and have been designed and located so as to be in compliance with sound health, safety and environmental guidelines acceptable to the Bank.

(h) All farm chemicals procured under the project would be ICAMA-approved products. Chemical use, handling and storage would be according to guidelines acceptable to the Bank.

(i) The PLG would be maintained with terms of reference, composition and resources acceptable to the Bank. The Government would maintain and support the Project Management Offices at all levels with terms of reference, composition and resources acceptable to the Bank.

(j) Annual overseas training and study tour plans would be submitted no later than December 1 of each year to the Bank for prior approval and all consultants would be hired in accordance with the IBRD guidelines on the selection and use of consultants.

(k) The implementation of the crop, fruit, sericulture and livestock sub-components would strictly follow the technical standards acceptable to the Bank group.

(l) The minority nationality development plan approved by the Bank would be implemented.

(m) The duration of land use rights would be specified in the contract with farmers and would be monitored under the project.

(n) Sichuan shall ensure that the initial stock of production materials under sericulture and agro-processing subprojects will not be financed under the sub-loans until the operation plans for the sub-projects are acceptable to the Bank Group and equipment are installed and ready for operation.

(o) Sichuan shall carry-out the agreed Resettlement Action Plans for the Manshuiwan and the Huangqiao subcomponents.

(p) Progress reports would be produced and forwarded to the Bank Group every six months. A mid-term review would be undertaken by June 30, 2001.

H. Readiness for Implementation

[X] The engineering design documents for the first year' s activities are complete and ready for the start of project implementation.

[X] The procurement documents for the first year' s activities are complete and ready for the start of project implementation.

[X] The Project Implementation Plan has been appraised and found to be realistic and of satisfactory quality.

I. Compliance with Bank Policies

[X] This project complies with all applicable Bank policies.

During project preparation, Bank policies pertained in the relevant ODs were carried out satisfactorily as follows:

(a) OD 4.20: Social Assessments and Minority Development Plan
(b) OD 4.30: Involuntary Resettlement
(c) OP 4.37: Dam Safety Review

[ ] [The following exceptions to Bank policies are recommended for approval: The project complies with all other applicable Bank policies.]

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Annex 1

Project Design Summary

China: Anning Valley Agricultural Development Project

Narrative Summary	Key Performance Indicators	Monitoring and Evaluation	Critical Assumptions
Sector-Related CAS Goals: (a) effective utilization of natural resources. (b) intensification of agricultural development. (c) improvement of environmental sustainability, (d) increase in rural employment (e) reduction in regional income disparity and poverty.	 (a) development and improvement of marginal land and water. (b) increase in cropping intensity index. (c) investment in land terracing, tree planting and watershed management. (d) reduced rural unemployment. (e) increase in average household income absolutely and compared to Sichuan.	 (a) area of land developed for agriculture outside the project area. (b) agriculture data on number of crops and yields in project counties. (c) percentage of hilly land adopting terracing/fruit planting. (d) employment statistics. (e) income statistics, living standards	(Goal to Bank Mission) (a) government will carry out land reclamation without project funding. (b) new agricultural technologies will be extended to farmers. (c) government support and information for these activities will be given. (d) job opportunities will be increased directly and indirectly through the project. (e)successful targeting of poverty groups through special programs will be implemented.
Project Development Objective: (a) increase in crop and livestock production and productivity. (b) improve marketability and increase value added to the products. (c) provide effective management of water resources. (d) promote development of mountainous areas, target poor minorities and women.	 (a) incremental production and yields of crops and livestock. (b) varieties and processed forms of crops and livestock according to market demand. (c) formation of river basin committee and planning; utilization of water resources in harmonized, effective and sustainable manner. (d) location of project area , number of poor minority households and women participating in the project.	 (a) periodic comparison of yield and production before and after project completion. (b) market survey and production flexibility to respond to demand. (c) performance and impact of river basin committee. (d) identify the project area and monitor that the targeted households are maintained.	(Objective to Goal) (a) technologies are disseminated and inputs are available to producers. (b) market is allowed to adjust freely. (c) composition of committee membership is balanced. (d) government supports role of All China Women's Federation in household identification and monitoring.
Outputs: (a) water supply for irrigation, urban and industrial uses and generation of electricity.	(a) infrastructure installed and areas brought under irrigation; farmer's satisfaction with irrigation delivery	(a) periodic survey results comparing current with pre-project benchmark; infrastructure completion report.	(Outputs to Objective) (a) Daqiao Dam, distribution systems and on-farm works completed.

(b) increased grain, vegetable and fruit production . (c) increased livestock production. (d) increased quantity and quality of silk. (e) value added to products through processing. (f) income from water charges sufficient to finance operation and maintenance. (g) reduction in soil erosion in hilly areas.	(b) hectare of marginal land developed and actual production levels. (c) number of livestock households and number of livestock raised per annum. (d) actual quantity and quality achieved. (e) required processing is carried out as designed. (f) level of water charges, collection rates and O&M costs. (g) hilly area is terraced and planted .	(b) crop and fruit production statistics; varieties, quality data from farmer survey. (c) collection of socio-economic data on livestock households (d) data from the reeling mills. (e) data from the processing plants. (f) compare actual rates with planned ones. (g) measures taken to prevent soil erosion on reclaimed land.	(b) new and improved crop and fruit varieties used in planting programs. (c) poor households are the major beneficiaries of livestock component (d) higher quality silk produced in the project area. (e) higher return for production under the project received. (f) cost recovery and self-sufficiency achieved. (g) environmental sustainability improved.
Project Components/Sub-components: (see Annex 2 for project description) (a) Water Resource Development. (b) Crop Development. (c) Orchard Development (d) Sericulture Development (e) Livestock Development (f) Agro-Processing (g) Institutional Strengthening.	Inputs: Cost includes contingencies. (a) US$105.5 million. (b) US$35.6 million. (c) US$36.3 million. (d) US$26.6 million. (e) US$13.3 million (f) US$12.7 million (g) US$8.9 million	For all components: - implementation of project components monitored regularly by borrower. - semi-annual progress report prepared summarizing status of project implementation and disbursement and highlighting issues. - Bank to dispatch 1-2 supervision missions per year to review implementation issues and to exchange views with borrower.	(Components to Outputs) For all components: - government promptly and consistently provides counterpart funding and effective administrative support. - effective implementation by Daqiao Corp., Water Resource Bureau and other technical bureaus. - improved coordination of government agencies at the local level. -farmers well motivated to carry out projects' recommendations. - markets available and prices favorable for projects' crops and livestock. - superior varieties and technologies successfully adopted by participants. - improved silk technologies used widely from farm households to silk reeling mills.

Annex 2
Anning Valley Agricultural Development Project
Project Description

Summary. The project would support the Sichuan Government's policy of developing the Anning Valley. The project would cover 15 counties within Liangshan Prefecture and Panzhihua Municipality. The area has high potential for agricultural development, because there are large areas of marginal land whose productivity could be markedly increased in the generally the good climatic conditions. The project aims to increase the production, productivity, marketability and value-added of agriculture, horticulture and animal husbandry in the area, with the particular further objective of reducing the poverty of farmers in remote areas. These objectives would be achieved through: (a) supplying additional and more reliable water for irrigation (also industrial and urban use), (b) developing land and technology for grain and vegetable production, (c) developing marginal hilly land for fruit orchards, (d) improving sericulture technology, (e) improving farmer income by introducing new varieties and technologies for livestock production and (f) adding value to crop and livestock production through processing. The project would foster the effective use of existing natural resources, promote the development of mountainous areas, encourage the participation of women in production and improve the environment and reduce soil erosion.

Project Component 1 - Water Resource Development US$105.5 million (44 percent of total project cost)

1. The water resources development component includes the following three subcomponents (see Table below):

(a) The **Manshuiwan Water Resources Development Subcomponent** to provide water for irrigation, industrial, urban and rural use as well as for the generation of electricity. The project areas are located in Liangshan Prefecture, primarily in the city of Xichang, and some areas of Mianning and Dechang Counties;

(b) The **Shengli Irrigation Subcomponent** to provide irrigation to high value crops in Renhe District and Zongfa Township of Panzhihua City;

(c) The **Huangqiao Irrigation Subcomponent** to provide water for irrigation in Miyi county in Panzhihua City and for domestic use in Miyi Town.

	Subcomponent Areas						
	Current Status				Future Status		
	Partially Irrigated	Rainfed	Marginal Land	Total	Gravity Irrigated	Pumped Irrigated	Total
Subcomponent	<----------ha---------->				<----------ha---------->		
Manshuiwan	3,353	9,414	1,633	14,400	12,900	1,500	14,400
Shengli	-	1,631	1,321	2,952	2,952	-	2,952
Huang Qiao	415	1,778	487	2,680	2,680	-	2,680
Total	**3,768**	**12,823**	**3,441**	**20,032**	**18,532**	**1,500**	**20,032**

Manshuiwan Subcomponent

2. The **Daqiao Dam** will be the key structure for resolving water supply for urban, industrial and agricultural use in the Anning River basin. The dam, which is located in Mianning County in the upper portion of the Anning River, is 40 percent complete. The estimated cost of the concrete face rockfill type dam is Y1.1 billion ($140 million). The river-bed level at the dam site is 1,934 m. Construction started in 1993 and has advanced to a level of about 45 m, about one half of the planned height of 93 m. The dam will be 264 m wide. Storage capacity will be about 658 Mm^3. Installed power capacity would be 100 MW (four units of 25 MW). Head would be 156 m, Q=82 m^3/sec through a 6.5 km tunnel. The dam, including the tunnel, is scheduled for completion by end-1998. The entire system is scheduled to be completed and operational by mid-1999. Financing to complete the facility is secured from local sources.

3. The project would support the Manshuiwan subcomponent, which would comprise the construction of a weir across the Anning River and trunk, main and branch canals to supply water to: (i) irrigate about 14,400 ha on the left bank of the Anning River, (ii) generate about 110,000 MWh of electricity per year through the 18 MW Huangtupo Hydro Power Station (HPS) to be constructed under the project, and (iii) provide about 380,000 m^3/day of raw water for domestic and industrial use. In addition the subcomponent would: (iv) stabilize water supplies to the existing Xili irrigated area of about 7,673 ha from the tailwater of the Huangtupo Hydro Power Station, (v) supplement the flow in the Anning River during low periods, and (vi) increase power benefits from the Yuehua and Potounao Hydro Power Stations (HPS).

4. The Manshuiwan Weir, which would be located on the Anning River near the Town of Manshuiwan in the upper portion of the middle reach of the Anning River, would divert 90 m^3/sec into a 8.2 km left bank trunk canal, which would start at elevation 1,614 m and bifurcate into 70 m3/sec for the HPS and 22 m^3/sec for irrigation of 14,400 ha on the left Bank of the Anning River[1]. The 14,400 ha to be irrigated would include about 1,500 ha in scattered locations above the elevation of the main and branch canal supply levels. The distribution network would consist of a main canal of approximately 33.4 km and two branch canals with a total length of 96 km. Canals would have stone masonry lining and trapezoidal or rectangular sections.

Manshuiwan Sub-Project
Main and Branch Canals

	Unit	Trunk Canal	Main Canal	Qionghai Branch Canal	Xide Branch Canal	Total	Remarks
Open canal	km	7.81	27.62	7.76	66.42	109.61	
Closed Conduit	km		2.36	1.85	0.02	4.23	longest 0.50 km
	sites		62	12	2	76	
Aquaduct	km	0.33	0.71	0.97	2.13	4.14	longest 0.60 km
	sites	1	26	11	16	53	
Tunnel	km		2.70	5.39	8.23	16.32	longest 1.32 km
	sites		6	8	18	32	
Inverted siphon	km		-	-	3.27	3.27	longest 2.03 km
	sites		-	-	4	4	
Total length canal system	km	8.14	33.39	15.97	80.07	137.57	
Water level at head	m	1,613.5	1,608.5	1,589.9	1,590.4		
Area irrigated	ha		2,900	4,007	7,493	14,400	
Discharge at head	m3/sec	90.0	20.5	4.0	9.0		
Land acquisition	ha	8.3	32.6	7.1	32.8	80.8	

[1] Intake arrangements and canal systems to irrigate about 10,000 ha on the right bank would be developed at a later stage

5. In order to provide water from the main and branch canals to the 1,500 ha in locations above the elevation of the main and branch canal supply levels, the project would provide four "concentrated" pumping stations to lift water from the Xide branch canal to irrigate area of about 700 ha. Water for another 800 ha would be supplied by 'non-concentrated' scattered individual small pumps. The majority of this area would be developed for fruit orchards. The lifts would range from 30 to 35 m and flows from 80 to 200 l/sec. Formal agreements between the land bureaus in the Huangshui and Xixi townships of Xichang city and the Mali township in Dechang county and farmer groups for the development of these areas have been concluded. Farmers groups would be fully responsible for the operation and maintenance of the pumping stations and conveyance systems.

6. To fully benefit from irrigation, about 9,414 ha would also be improved. The areas selected by the township bureaus are currently medium and low-yielding and in need of improvement measures such as drainage, leveling, farm roads, top soil, terracing, etc. The land improvement works would be planned, designed and implemented by the Agricultural Development Office (ADO) at the county level. The average cost would not exceed Y 5,500/ha. Benefiting farmers would provide labor for implementing the works, which would represent about 70 percent of the value of the works. The balance would be provided by local governments in the form of materials and equipment. Contracts for land improvement works would be concluded between the beneficiaries, township agricultural bureaus and the county PMO.

7. About 1,633 ha of currently marginal lands in Xichang and Dechang County would be reclaimed prior to receiving irrigation under the project. The areas have been identified by the townships. About 1,230 ha are marginal land with acceptable slopes, substantial rock outcrops and little top soil. Others, about 400 ha, are close to the river and flood-prone. The average reclamation cost would be Y 18,670 per ha. Seventy percent of funding would be provided by the beneficiaries and the balance of 30 percent by the local governments.

8. The project would generate substantial benefits not only from supplying irrigation water but also from generating electricity and supplying raw water to industry, Xichang City and rural communities currently lacking good quality drinking water. Electricity and water charges tariffs have been agreed with the Liangshan Prefecture as follows: electricity Y 0.55/kWh, irrigation water 15 kg of rice per mu (Y 40/mu assuming a rice price of Y 2.6/kg) for all crops, raw water for industry Y 0.6/m^3, water for urban use Y 0.5/m^3 and water for rural communities Y 0.4/m^3. These rates would be adjusted periodically in line with price increases.

9. The Manshuiwan Subcomponent under the project would be implemented by the Daqiao Hydroelectric Development Corporation (DHDC). DHDC was set up in 1996, registered as a state-owned enterprise to act as the owner on behalf of the Sichuan Government overseeing the implementation of the Daqiao dam and the Manshuiwan Diversion Scheme. It would build, operate and maintain the Daqiao Dam, the left bank diversion canal network, including headworks, main and branch canal systems, and subsequent schemes to be developed on the Anning River. Under the project, DHDC would also be responsible for preparing and executing tenders for civil works, goods and services and for installing plant and equipment. It would retain the Sichuan Water Conservancy and Hydroelectric Design and Research Institute of the Water Conservancy Bureau of Chengdu to complete designs, execute design changes. The on-site engineer for construction supervision would be contracted upon completion of a competitive selection process in which at least four qualified firms/institutes will participate. The Sichuan Hydroelectric Design and Research Institute would be one of the short-listed institutes. Laterals and sublaterals originating from the branch canals and serving areas of 10,000 mu or less would be constructed with significant participation of the farming communities benefiting from the irrigation. Construction of field ditches would be undertaken entirely by farmers.

10. Following the construction of infrastructure works, DHDC would be responsible for the operation and maintenance of the facilities built under the project. It would prepare manuals with procedures and instructions for the operation and maintenance of these works. In addition, it would develop an

appropriate organization for O&M, which would include adequate staffing details, cost projections and job descriptions.

Shengli Subcomponent

11. The **Shengli Dam** was built during 1993-1995 on the Yizi River. The cost was Y75 million (approximately $9 million). Storage capacity is about 22 Mm^3. Dam height is 26 m. Irrigation would be supplied to the right bank only, through an existing 19 km tunnel with a flow capacity of 3.0 m3/sec. Tunnel construction was completed in 1996. A small 200 kW power plant has been built on the left bank below the dam, which uses a release of 0.5 m^3/sec from the Shengli Reservoir of the Yuejin Dam. This dam is located about 9 km upstream of Shengli and was built in 1966. The tailwater of the power plant irrigates about 700 ha on the left bank.

12. The project would support the completion of the infrastructure facilities, which would provide irrigation to about 2,952 ha of mainly steeply inclined land, including 1,321 ha of currently uncultivated land. The project would support the implementation of 37.9 km of branch canals, which would circle around a mountain, utilize a 18.8 km tunnel/main canal and reach an elevation of 1402 m. Four irrigation areas would be developed under the project, one to be served by the main canal (283 ha) and three branch canals serving 884 ha of the Ashuda, 810 ha of the Mahaida and 975 ha of the Zhumu mountain areas. The total length of the laterals would be 100.8 km, and field ditches would be 105 km. Canal designs mainly have trapezoidal and rectangular sections and stone masonry lining.

13. To fully benefit from the irrigation provided, 1,631 ha would be improved and another 1,321 ha of currently marginal lands on relatively steep slopes would be reclaimed. The lands to be improved are rainfed lands (1,331 ha) and would be improved at a cost of Y 6,610/ha. The balance or 300 ha would be improved for the cultivation of vegetables at a cost of Y 38,100 per ha. About 300 ha on relatively steep slopes have already been reclaimed during the past three years for the cultivation of high value mango orchards. An additional 354 ha would be reclaimed for mango cultivation under the project at an average cost of Y 82,410 per ha. Sixty percent of financing would be provided by local governments with the balance 40 percent to be provided by benefiting townships, villages and farmers. The reclamation program includes farm roads, water regulating facilities, ditches, terracing, leveling, preparing of tree planting pits and the supply and planting of mango seedlings. Another 667 ha would be reclaimed for food crop cultivation at a cost of Y 34,700 per ha. These land reclamation and land development programs would be implemented under the crop development component of the project.

14. The Hydroelectric Bureau of Panzhihua City would be responsible for the implementation of the Shengli subcomponent. It would select and employ, through a competitive process, an enterprise to assist with construction supervision, contract administration and quality control of the major works, including main and branch canals and lateral canals serving areas larger than 10,000 mu (667 ha). The Hydroelectric and Farm Machinery Bureau of Renhe District would be responsible for the implementation of the subbranch or lateral canals. It would coordinate the design and implementation of these works with the Hydroelectric Bureau of Panzhihua and the beneficiaries. These works would be constructed with the participation of the farming communities benefiting from the provision of irrigation. Construction of field ditches would be undertaken entirely by farmers.

15. Water charges for irrigation have been agreed with the Price Bureau of the Government of Panzhihua. They would be the following: for irrigation of: (i) grains Y 30/mu, (ii) vegetables Y 60/mu and (iii) fruit orchards Y 80/mu. They would be adjusted periodically to absorb price increases and to ensure that charges account for O&M cost and a reasonable portion of the investment cost. The Shengli Reservoir Management Bureau would be responsible for the operation and maintenance of the entire system. It would set up four Village Management Stations for the areas to be irrigated by the main canal and the three branch canals. These Stations would direct and oversee water management practices (allocation and distribution) and system maintenance to be carried out by seven benefiting townships comprising 22

villages. Apart from looking after O&M, the management stations would also be responsible for collecting water charges at townships and village levels.

The Huangqiao Subcomponent

16. The project would provide support for the construction of the Huangqiao Dam and the conveyance and distribution system to supply water for irrigation and domestic use and for the generation of electricity. The project would built a 68 m high earthen dam and create a reservoir with a storage capacity of 19 Mm^3 and two small hydroelectric power stations with an installed capacity of 640 kW and water treatment facility which would supply Miyi town. The reservoir would supply: (i) 2.7 m^3/sec into a 0.4 km conveyer which would feed 1.4 m^3/sec into a 17.6 km right (south) bank main canal and 1.3 m^3/sec into a 18.8 km left (north) bank main canal and (ii) 16,000 m^3/day of treated water to Miyi City. Branch canals would be 60.5 km long in total. The distribution system would include 332 km of laterals and sublaterals and 324 km of field ditches. About 2,680 ha would be developed for irrigation under the project, 1,260 ha on the right bank and 1,420 ha on the left bank. Of these, 1,300 ha, has already been issued to local farmers and is currently cultivated with mostly rainfed low yielding sugarcane. For the development of these lands farmers received support from the local sugar factory.

17. Under this subcomponent, a demonstration of overhead technology for irrigation of sugarcane on 3 ha would be established. In addition drip lines and micro sprinklers would be tested initially in an area of 2 ha, primarily for the irrigation of vegetables and fruit orchards. The sprinkler equipment and drip lines would be owned and installed by the Huangqiao Reservoir Management Bureau under the project. The hydroelectric and agricultural bureaus of the county would install the equipment and train the farming community to properly operate and maintain the equipment. In addition to the normal water charges benefiting farmers would pay an additional Y 30/mu, which will be retained for financing the training and O&M. After farmers are trained the equipment will be offered for sale to the communities concerned, on terms to be agreed with them. Financing may be provided from the small scale hydraulic project fund. The adoption of sprinkler equipment and driplines is projected to reduce water use by 50 percent.

18. To fully benefit from irrigation, 2,193 ha would be improved and another 487 ha of currently marginal lands would be reclaimed under this component. The land improvement works would cover 733 ha of recently reclaimed rainfed sugarcane lands, at a cost of Y 10,650 per ha, and 1,460 ha of currently rainfed areas, at a cost of Y 9,123 per ha. About 354 ha would be reclaimed for irrigated sugarcane, at a cost of Y 23,025 per ha, and another 133 ha for mulberry cultivation, at a cost of Y 1,965 per ha. The land improvement and reclamation programs would be 30% funded by local governments with the remaining 70% coming from benefiting townships, villages and farmers. These works would be planned, designed and implemented under the project's Crop Development Component.

19. A special implementation unit has been established for the Huangqiao Subcomponent, the Huangqiao Construction Office (HCO). It would oversee the implementation of the major infrastructure works, including the dam and branch canals. The Hydroelectric Bureau of Miyi County would have primary responsibility for the implementation of laterals and sublaterals. The HCO would be staffed with qualified personnel from relevant county offices. The Hydropower Bureau of Miyi County would be the lead agency. HCO would retain the Sichuan Hydraulic Science Institute (SHSI) to oversee design changes during construction and select and contract an independent engineering enterprise as the "engineer" for the construction of works. The laterals and sublaterals would be constructed with significant participation (40-50 percent of the cost) of the farming communities benefiting from the provision of irrigation. Construction of field ditches would be undertaken entirely by farmers.

20. The Huangqiao Reservoir Management Bureau would be responsible for the O&M of the infrastructure facilities. It initial activities would be the preparation of O&M procedures, manuals, organizational structures and staffing. A management committee of representatives of the benefiting villages and townships would also be established to work closely with the Management Bureau. It will have a key role in preparing annual water allocation plans and in overseeing the collection and spending of

the water charges. In addition, committee for managing O&M would be established at township and village levels. Those committees would be responsible for planning and implementing the O&M activities of the sublaterals and ditches. They would contract for irrigation water supplies each year in accordance with the demand projections and water charges sanctioned by the Panzhihua City government.

21. Irrigation water users would be charged Y 30/mu for the irrigation of grains and Y 54/mu for irrigation of cash crops. These charges have been agreed and confirmed by Miyi County and Panzhihua City. It is projected that by year 2010 about 35 Mm^3 of treated water would be sold to Miyi County at the current rate of Y 0.5/m^3. About 3.5 MWh of electricity would be sold annually to the county's power company at a current rate of Y 0.3/kWh. All charges would be adjusted periodically to reflect increased prices and to ensure that O&M costs and a reasonable portion of the investment cost would be recovered.

Resettlement

22. The construction of the Manshuiwan Weir, the Huangqiao Dam and the canal distribution networks would require resettlement of about 2,638 people. Of them 1,506 persons will have to be relocated. Detailed resettlement action plans (RAPs), in accordance with the Bank's Operational Directives (OP 4.30) on Involuntary Resettlement, have been prepared and approved for implementation under the project and can be found in the Project File. The PPMO would retain the Sichuan Water Conservancy and Hydroelectric Design and Research Institute of Chengdu to monitor and evaluate the implementation of the RAP during project implementation.

Anning River Basin Water Resources Management Committee

23. The Governments of Panzhihua City and Liangshan Prefecture have established the Anning River Basin Water Resources Management Committee (WRMC). The committee would provide guidance to agencies involved in the planning, management and utilization of the water resources of the Anning River and its tributaries. The membership of the committee consists of government as well as non-government stakeholders. It is composed of representatives of various government agencies associated with water management in the basin, universities and agricultural research institutions, water users (farmers, industries, cities, etc.) and non-government organizations. The terms of reference for the committee would focus on addressing water quality and quantity in the Anning basin in economic terms with respect to distribution among the various using sectors. The committee would be supported by a permanently-staffed, small secretariat and would focus on the following tasks: (i) integration of sector programs, (ii) ensure efficient use of new water resources in all applications (human, livestock, industry, agriculture, hydropower development and any other uses), (iii) manage water resources with environmental issues in mind, (iv) prepare for emergencies such as drought and floods, (v) monitor water quality, and (vi) provide public information. In addition it would provide guidance to water allocation strategies in the entire basin underpinned by spatial plans, pricing policies, water rights systems and real-time water management operations. In addition it will commission new studies and the development of a river basin model using the 1990 studies as a starting point. Technical assistance would be provided to assist the committee with the development and/or strengthening of operating procedures and regulations.

Dam Safety Review

24. The Sichuan Water Conservancy Bureau (SWCB) appointed a Dam Safety Review Panel (DSRP) of experts in 1997. The DSRP will undertake periodic, comprehensive and independent reviews to evaluate features and actions pertaining to the safety of those dams and appurtenant structures supplying water to the project areas. The DSRP is guided by the dam safety assurance objectives of the SWCB and by related legislation, regulations, standards and criteria. It undertook the first review of the existing Shengli, Yuejin and Pingdi Dams on the Yizi river, the Daqiao Dam under construction on the Anning River, the planned Huangqiao Dam on the Caochang River in Miyi County and the planned Manshuiwan Weir on the Anning River in Mianning County during October and November 1997. The review concluded that the existing dams were designed and constructed satisfactorily. However, a monitoring

program and a number of remedial measures were recommended for Yuejin and Pingdi Dams. These measures, estimated to cost about Y 1 million would be implemented under the project. No major issues were identified with the ongoing construction of the Daqiao Dam and the planning and design features of the Huangqiao Dam.

25. SWCB would convene the DSRP at regular intervals to review the status of works in progress. The frequency of the reviews and their timing would be adjusted to conform with the schedule of works in progress on the Daqiao and Huangqiao Dams and the Manshuiwan Weir. The composition of DSRP, and the areas of expertise that it covers may varied during the course of project implementation, as considered appropriate by SWCB in consultation with the Chairman of DSRP and the Bank.

26. At the provincial level, a Dam Safety Unit would be set up to develop and establish standardized surveillance procedures to ensure that the safety status of their dams is known at all times. These would consist of visual inspections, according to an appropriate checklist, and a data base containing the various instrument readings from the dams, which would be processed into graphical form for easy and quick assessment. A Dam Safety Committee, consisting of experienced dam specialists, would also be set up to review at regular intervals the surveillance reports of the Dam Safety Unit and the emergency procedures. Based on its findings, it would assess whether any actions would be necessary. It would also ensure that a schedule would be adopted for regular testing, under operating conditions, of all mechanical gates and the valves associated with dewatering tunnels, controlled openings and spillway gates.

27. To make sure that the above program would be put in place and would be executed in an efficient and timely manner, technical assistance would be provided to cover the fundamental aspects of dam surveillance. A group of 5 to 6 Sichuan WCB officials responsible for the operation and maintenance of dams would be made familiar with what owners of dams outside China would find necessary to do in order to fulfill their public duty of care in operating those assets. This technical assistance would be targeted towards engineers in the middle range of experience with around 10 years association with design, construction or management of dam facilities. The course would be practical in nature and would be taught over a period of about 3-4 weeks. The cost of this course would be about $50,000 equivalent, on the assumption that it would be conducted in Australia.

Project Component 2 - Crop Development US$35.6 million (15 percent of total project cost)

28. This component is designed to help the Sichuan Provincial Government implement its high priority objectives of increasing provincial food production and improving the lagging status of Liangshan Prefecture and Panzhihua Municipality. The focus is on the main staple grain crops (rice, wheat, and maize) and on potatoes and vegetables. The major constraints to increased grain and vegetable production are the shortage of suitable land for these crops and a number of other inter-linked factors, such as lack of quality, improved-variety seeds and inadequate extension services. Extension advice suffers from poor or non-existent extension facilities, inadequately trained farmers and extension staff, and the lack of a good research-extension interface for the rapid transfer of newly developed technologies to farmers.

29. The crop development component is therefore an effort to rectify this situation through a variety of interventions, including reclamation of new land and improvement of existing land, seed multiplication of improved varieties, improvements to the extension service, farmer and staff training and research. The component is divided into two grain and vegetables subcomponents and will be implemented by the Bureaus of Agriculture in Liangshan and Panzhihua for the grain subcomponent and the Vegetable Office in Municipal Administration of Panzhihua for vegetables. In the grain subcomponent, the project would support (a) reclamation of 3,500 ha of new land, (b) improvement of 9,800 ha of low-yielding land, (c) seed multiplication of 2,300 ha (paddy 850 ha, wheat 1,300 ha, hybrid maize 150 ha, and potatoes 7 ha), (d) introduction of new crop production technology in 2,560 ha (1,000 ha paddy, 500 ha wheat, 700 ha corn and 360 ha potatoes), (e) strengthening of 60 Township Agricultural Extension Centers, (f) farmer training, and (g) research. In the vegetable subcomponent, the project would support the (a) development of 1,200 ha of new land, (b) improvement of 3,000 ha of existing low-yield land, (c) development of a 10-

ha sprinkler irrigation demonstration site, (d) development of a 10-ha vegetable seed multiplication site, (e) training of farmers and staff, and (f) financing of applied research for vegetables. The cultivation of vegetables is of particular interest to Panzhihua as a result of its growing urban population. Crop development under this component is detailed as follows:

Crop Development Component – Area (ha)						
	PY 1	PY 2	PY 3	PY 4	PY 5	Total
Grain Production						
Liangshan						
Land Reclamation	250	350	300	300	300	1,500
Land Improvement	1,000	1,000	1,000	1,000	1,000	5,000
Seed Propagation - Rice	170	255	213	127	85	850
Seed Propagation - Wheat	260	390	325	195	130	1,300
Seed Propagation - Corn	30	45	38	22	15	150
New-technical Extension - Rice	200	300				500
New-technical Extension - Wheat	200	300				500
New-technical Extension - Corn	200	200				400
New-technical Extension - Potatoes		120	240			360
Potato Seed Propagation		7				7
Panzhihua						
Land Reclamation	400	400	400	400	400	2,000
Land Improvement	1,000	1,000	1,000	1,000	800	4,800
New-technical Extension - Rice	200	300				500
New-technical Extension - Corn	150	150				300
Vegetable Production						
Vegetable - New Land	600	600				1,200
Vegetable - Improved Land	1,500	1,500				3,000
Vegetable - Sprinkler	10					10

30. In both subcomponents, funding will be provided for civil works to reclaim new land and improve existing holdings. These works include building irrigation channels and field access roads, levelling land and applying organic and inorganic fertilizer. For seed multiplication activities, assistance for initial expenditure on various crops (hybrid and conventional rice, hybrid maize, wheat and virus free potato) is also planned with inputs of fertilizer, agro-chemicals, etc. to the outgrower farmers on contract to the seed companies. In the vegetable subcomponent, seed multiplication, seed processing, office and laboratory equipment would be funded. A total of 60 agriculture extension stations would be rehabilitated or constructed and also equipped.

Project Component 3 - Orchard Development US$26.6 million (11 percent of total project cost)

31. This component aims to increase the quality and varietal distribution of high-quality fruit production in the project area. Development of quality fruit has been given a high priority by the Sichuan Provincial Government due to the income generation capacity of orchards, its potential for export to other areas of China, and its reduction of soil erosion commonly found in the Anning River Valley on sloping lands. The project area is already a major producer of fruit, especially sub-tropical fruits. The agro-ecology of the area is well suited to this cultivation, and it also has good communications with other parts of the Province and China through a well developed rail and road system. It has a long history of fruit cultivation with many quality varieties developed and presently cultivated, namely, pomegranate (red and green skinned varieties), navel orange (Newhall, Navelina, Skaggs Bonanza), and pear (Golden Pendent, Golden Flower, 6-2 and 5-51). Constraints facing further production are (a) the need to improve the technical management of the orchards by farmers, (b) the lack of quality planting material of the recommended fruit varieties, (c) a shortage of land available for the establishment of orchards, (d) poor post-harvest processing facilities, and (e) the lack of proper marketing infrastructure.

Orchard Development Component – Area (ha)						
Orchard Development	PY 1	PY 2	PY 3	PY 4	PY 5	Total
Liangshan						
Pomegranate - Mini-Sprinkler		20				20
Pomegranate - Gravity Pipe		30	90	60		180
Pomegranate - Mobile Sprinkler		90	90	60		240
Pomegranate - Rehabilitated		150	150			300
Panzhihua						
Mango - Mini-Sprinkler		30				30
Mango - Gravity Pipe		150	150			300
Mango - Mobile Sprinkler			240	360		660
Longan - Mini-Sprinkler		30				30
Longan - Gravity Pipe		45	45			90
Longan - Mobile Sprinkler			75	105	15	195

32. The project would support the development of marginal land and the improvement of existing orchards for high quality fruit production. It would invest in the (a) establishment of budwood gardens and nurseries (19.5 ha), (b) development of 1,745 ha of new pomegranate, mango and longan orchards, (c) rehabilitation of 300 ha of pomegranate orchards, (d) construction of simple post-harvesting facilities and (e) support of training, research and extension. For each fruit crop, three different irrigation systems will be installed, namely, (a) mini sprinkler (total area all crops 80 ha), (b) plastic pipe (570 ha), and (c) portable sprinkler (1,095 ha). These newly developed orchards would plant budded/grafted seedlings of improved varieties and be given high levels of management, through extension advice and farmer training. Where feasible, orchards would be inter-cropped with annual field crops and vegetables during the first 3-4 years of establishment, and consolidated blocks of 20-30 ha would be developed where possible. Improvements to existing orchards would be undertaken on 300 ha in Liangshan during the period PY1-PY2 for pomegranate (300 ha). Existing orchards are to be upgraded through inter-planting missing stands and grafting established trees with improved varieties. Irrigation is also to be provided to these orchards. In Panzhihua, budwood gardens and nurseries totaling 30 ha are to be established for mangos and longan in order to provide the necessary improved plant material for the orchards. Until these come into production, budwood will be sourced from both within Sichuan and from other provinces of China.

33. For orchard development and rehabilitation, the project would finance production and irrigation equipment, land development materials (explosives, land treatment materials and construction materials for terraces and feeder roads), production inputs such as fertilizer, agro-chemicals, and tools.

Component 4 - Sericulture Development US$36.3 million (15% of total project cost)

34. This component aims to increase and improve the quality and productivity of silk production by introducing new sericulture production and processing technologies to cocoon-production households, silkmoth egg grainages, young-silk-worm rearing centers, silk-cocoon drying centers and silk reeling mills.

35. The existing quality of reeled silk produced in the Anning Valley is poor by Chinese standards, and silk reeling mills achieve an average reeled-silk grade of only 2A in a grading system that reaches 6A for the top quality product. This reduces the value of silk production throughout the industry, from mulberry farming through cocoon production to silk reeling, and the loss to the project area is substantial. The project area should be able to produce grade 4A or higher by upgrading the industry at all levels, under the project, through improved silkmoth egg grainage facilities, improved cocoon production methodology and facilities, improved drying center equipment, and upgraded reeling mills (automatic reeling machines and other improvements). This would provide an increase of up to 30% in the value of production, and there would also be increased revenues from the incremental production.

36. This sub-component has been designed to be market driven, and project investments would be closely matched to the identified market for raw silk and cocoons. Value added processing would be undertaken within the project area, and most cocoons produced under the project would be reeled into raw silk. Silk reeling mills have been considered as nucleus estates in which the mills would identify the cocoon production areas and collection centers to be developed for their processing requirements. Some small proportion of dry cocoons could be exported to other provinces (or abroad).

37. The project would support investment in production, processing and marketing facilities for the production of 560 t/y of reeled raw silk, and 486 t/y of dried cocoons for export to other provinces and abroad. The project would include 2,670 ha of incremental mulberry farming, 694 young-silk-worm-raising households, and 23,808 cocoon-raising households. Facilities would include two upgraded silkmoth egg grainages, expanded or newly constructed 280 t/d cocoon drying facilities, and four expanded silk reeling mills with a total of 8,000 incremental ends.

Production volumes planned for the project area sericulture component.

County	Raw (reeled) silk t/y	Dry cocoon for reeling t/y	Dry cocoon for export t/y	Fresh cocoons t/y	Silkmoth eggs boxes/y	Mulberry t/y
Xichang	56	173.6	48.6	533.3	16,666	10,666
Ningnan	168	520.8	145.8	1,599.9	49,997	31,998
Huidong	168	520.8	145.8	1,599.9	49,997	31,998
Yanbian	168	520.8	145.8	1,599.9	49,997	31,998
TOTAL	560	1,736.0	486.0	5,332.9	166,656	106,660

38. The project would introduce improved technology for cocoon production at the household level under the project. Cocoons would be produced in vertical cardboard frames instead of horizontal trays. This technology has the advantage that each cocoon is spun in a cell in the suspended frame, and as all cells are of the same dimensions cocoon weight and size are less variable. The cocoons stay cleaner, and the cocoons do not get damaged by the plastic netting or straw that farmers use in the traditional horizontal trays. This results in a higher proportion of cocoons being Grade-A and a lower proportion being Grade-C.

Production facilities planned for the project area sericulture component.

County	Raw silk auto-reeling ends	Drying center expansion 5t/d to 10t/d	Cocoon drying centers New 10 t/d	Cocoon production households	Young silkworm households	Mulberry farming ha
Xichang	800	6	0	2,381	69	267
Ningnan	2,400	0	8	7,142	208	800
Huidong	2,400	16	0	7,142	208	800
Yanbian	2,400	0	8	7,142	208	800
TOTAL	8,000	22	16	23,808	694	2,666

39. The project would finance the construction or expansion of 694 **young-silkworm-rearing centers** (7.3x5.5 m) to provide quality silk-worms to cocoon farmers. The investment in rearing centers would be $1.296 million and working capital $0.196 million. The project would also support the construction of 23,808 **cocoon rearing sheds** at cocoon producers households, with an investment of $14.363 million plus working capital $2.62 million. These newly constructed or expanded facilities would be designed with improved ventilation and sanitary wall and floor surfaces. The project would provide standard designs, necessary construction materials, fixtures, fittings and equipment, and the farmers would provide labor to construct the buildings. The standard designs aim to provide improved building quality to enhance cocoon production standards, whilst minimizing the cost of construction. It has been assumed that the farmers already own the

land and are building cocoon rearing houses near their own dwellings. The project would provide all necessary utilities to the new buildings, such as power lines, water supply, and drainage, and pools for disinfectant and mulberry storage. The project would provide equipment, including ventilators and tools required for propagating silk cocoons.

40. The project would finance the improvement of two existing **silkmoth egg grainages** located in Xichang and Dechang. Both grainages are in generally poor condition and lack essential facilities, such as climate-controlled rooms for hibernation, aestivation, incubation, and male moth preservation. Improvements are needed in the existing production, packing and laboratory areas, where building surfaces need to be replaced with sanitary surfaces, doors and windows need to be replaced with sanitary waterproof materials, and ventilation and lighting need to be improved. The investment proposed for the grainages includes upgrades of the existing facilities only, and not expansion of the facilities that are already of higher capacity than needed for the project area. The investment on upgrading the grainages would be $0.514 million, with $0.495 million for working capital.

41. **New cocoon collecting and drying centers of 10 t/d capacity** would be constructed at 16 locations based on a new, with continuous dryers and storage facilities for a complete crop of cocoons (about 6 to 7 days). **Cocoon collecting and drying centers of 5 t/d capacity** would be expanded to 10 t/d at 22 locations. The standard 10 t/d design single building would be situated on a 1 mu site, and has two stories with a tiled roof. The ground floor provides a 272 m^2 reception and grading area, a 280 m^2 sorting and store room, a 144 m^2 room for the cocoon dryer, a 24 m^2 office, and 168 m^2 for services equipment. The whole of the ground floor is surrounded by a 200 mm moat as a deterrent to ants. The second floor provides 840 m^2 for dried-cocoon storage. The whole building can accommodate one complete season's crop of dried cocoons, about 250 tons. The investment on constructing and expanding drying centers in four counties would be $7.633 million, with $4.276 million for working capital.

42. The equipment comprises a boiler of 1 t/h capacity, a dryer of 10 t/d capacity, power supply equipment, water supply equipment and a water storage tank for fire protection. A small conveyor transports cocoons from the dryer to the second floor storage area. The same machine is reversible for transporting cocoons down to the dispatch dock. All necessary tools, scales and baskets would be included in the investment. Offices would be provided with simple office and communications equipment. Suppliers of the equipment purchased under the project would be required to provide local training of 1 man-month.

43. The project would support the **expansion of silk reeling mills** and in four counties. Existing manual reeling equipment would be replaced with modern automatic reeling equipment. The mills would be expanded by means of automatic reelers capable of producing from 70 to 90 kg silk per end per year. The equipment would include modern reception conveyors, peeling machines, sorting conveyors, stainless steel cookers of improved design, and automatic reeling machines and re-reelers of improved design at all sites lacking them. At most sites, the existing services are suitable for the expanded capacity, but where these are inadequate, the necessary boilers, power and water supply equipment, and water storage tanks for fire protection have been included. Office and communications equipment would be provided where these are not now available. The investment on and expanding reeling mills in four counties, and providing modern reeling equipment, would be $2.079 million, with $1.698 million for working capital.

Implementation.

44. In view of the high investment cost and widely distributed nature of this component, the mission consider that the method of implementation of the sericulture component needs to be clearly defined and to be conveyed to all project entities at county, township, village and farmer levels by production of a clear and concise advisory booklet. The PPMO will, therefore, produce an advisory booklet describing in detail the mechanism of implementing this component. The draft copy of the booklet will be submitted to the Bank mission before Project Launch Workshop, and will be discussed as part of the workshop. The approved version of the booklet will be printed (about 25,000 copies will be required over three years) and the PPMO

will distribute the booklet to all levels of the PMO and to all townships, villages and farmers that will participate in the project. **The booklet will need to describe the following subjects:**

Farmers Level Advice. The booklet will detail implementation of project activities at household level and will describe the following :

a) The project has designed standard buildings and equipment and production techniques for worm and cocoon production that will improve the quality of cocoons produced by project farmers. The booklet will briefly describe these improved technical standards for buildings and equipment.
b) Each project farmer is required to construct his worm or cocoon house to the new standards, or to upgrade existing buildings to the new standard, in order to receive assistance from the project.
c) Each participating farmer will be eligible for two fixed packages of materials from the project to produce high grade worms or cocoons : (i) a package of construction materials to construct a new cocoon shed or worm rearing house, and (ii) a package of equipment including frames, shelves and tools. Farmers that are upgrading their existing buildings will have the option to select the equipment package only. The booklet will give details of the two standard packages.
d) Each participating farmer will need to sign a simple contract with the village committee to implement the project and keep to the high technical standards and repayment rules required by the project. The booklet will contain a sample form of contract.

Village Committee Contracts. The booklet will detail implementation of project activities at village committee level and will describe the following:

a) Each participating village committee (or group of farmers) will be required to sign a contract with the project PMO to implement the project and keep to the high technical standards and financial rules required by the project. The booklet will contain a sample form of contract.
b) Each participating village committee will be required to submit a list (to the PMO) of farmers that have signed contracts and will participate in the project. The booklet will contain the sample letter/list from the village committee to the PMO.

PMO Requisition and PPMO Procurement. The booklet will detail implementation of project activities at PMO level:

a) Based on the number of farmers in each contracted village, the PMO will submit a requisition to the PPMO for procurement of packages of materials and equipment. The requisition will detail the number of construction material packages and the number of equipment packages, and the delivery instructions. The booklet will contain a sample requisition form.
b) The PPMO will procure the materials and equipment packages for the project, and will comply with the delivery instructions.

Project Component 5 - Livestock Development US$13.29 million (6 percent of total project cost)

45. This component aims to increase the income of project farm households through improved livestock production. The project area has abundant natural resources and by-products which can be used as feed, but livestock productivity is low. The major constraints are lack of quality breeds and feed, inadequate animal husbandry management, and a poorly supported veterinary and animal husbandry extension program. For most farmers, cattle, sheep and goat production is a sideline enterprise and depends largely on the availability of straw, hay, leaves, wheat bran, and corn stover for fodder. Livestock productivity's could be significantly increased if proper attention were paid to supporting services. The project is designed to (a) improve breeds of sheep and ducks, (b) introduce ducks and rabbits as additional income sources, (c) support pasture and feed development, and (d) strengthen animal husbandry support services.

46. **Sheep**. The main breeds of sheep within the project area are the 3-Breed Cross (Local*Border Leicester*Xinjiang), the Xiaoweihangyang (or Shandong) and the Xinjiang. The Xinjiang produces the finest and the greatest quantity of wool with the highest price. It is therefore the obvious breed to choose for the best economic returns from wool. The Xiaoweihangyang is a very fertile, large breed, which can produce up to eight lambs/ewe/year under ideal conditions. It is the obvious breed to choose for meat production, but its wool is poor in both quantity and quality. The 3-Breed Cross known locally as the Semi-Fine Wool breed is used to provide wool for Yi villagers wishing to spin their own traditional clothes. This breed is very fertile for meat, but the wool is too coarse for large scale commercial wool production. Farmers at higher altitudes, particularly Yi people, should concentrate on the wool production (quality and quantity) using merino type sheep, such as the Xinjiang and Mongolian merino. At lower altitudes, farmers should try to use meat-type sheep, such as the Xiaoweihangyang breed.

47. The project would enlarge and rehabilitate eight sheep breeding farms in Liangshan and one in Yanbian. The main purpose of the sheep breeding farms is to breed rams for sale to farmers, but they also provide training for farmers in sheep production and wool harvesting. The project would enlarge the existing area of improved pasture at each farm, purchase additional breeding stock, and build additional pens and housing for breeding stock. The project would also support 8,038 households (5,200 hhs in Liangshan and 2,838 hhs in Yianbian) in developing sheep production.

48. **Goats**. Traditional goat breeds are suitable for this area and the project would not attempt to change them. Project intervention would be to (a) persuade farmers to shift from goats to sheep in order to reduce the ill effects that grazing goats can have on soil erosion, (b) introduce the practice of pen-raising instead of grazing, and (c) introduce new rams for breeding in order to prevent in-breeding. Accordingly, the number of project goat households was reduced to 5,500 from the original proposal in Liangshan and to 1,080 in Yanbian. The reduction was more in the mountainous regions of Yanbian, where goat production would be replaced by sheep production. In Yanbian all goats will be kept in pens and not allowed to graze. The goat households in Liangshan would be in Huidong, Huili and Mianning. This problem is not as evident in these counties, particularly in counties such as Mianning, where there are already significant numbers of goats being raised as an alternative to pigs on relatively flat land not subject to soil erosion. A close watch will be kept by the PMO on all goat raising households.

49. **Ducks**. The project would support 500 duck households to produce an additional 1.75 million ducks annually in Dechang County. The households would fatten 3,500 ducks annually, in five batches, each batch fattened for two months from day-old purchase to slaughter. It would also finance the expansion and redevelopment of an existing privately owned duck breeding farm near Dechang. About 0.5 million ducks would be processed by farmers and 1.0 million would be processed by medium and small specialized-household operations and local slaughtered companies in Dechang and Xichang. The company running the breeding farm is a shareholder in the processing facility. A privately owned feed mill would produce the feed concentrates necessary to feed the additional ducks produced by the project.

50. **Rabbits**. Large scale commercial production of rabbits is new to the project area and the rabbit breeding farm at Xichang is still at an early stage of development, though its future appears bright. It is well managed and commercially oriented. Rabbit rearing is an ideal activity for poor farm households, especially for Yi women. Unlike poultry, rabbits do not require large quantities of expensive feed concentrates, because they can digest pasture like ruminants such as sheep and cattle. The quantity of feed required per rabbit is relatively small, and the pasture can be grown in a small area, such as a household garden, from where it is cut and carried daily to the rabbits. Rabbits are extremely fertile, producing up to 40 surviving offspring per doe per year in five batches. Rabbit raising has been very successful in other projects such as the Songliao Plain Agricultural Development Project (ADP) in Liaoning Province and the Shandong ADP in the Yi Meng Mountains area.

51. Success in rabbit production, however, is not automatic, since rabbits are susceptible to disease unless proper management techniques are followed. Suitable training programs for potential rabbit households, therefore, have to be implemented to ensure that they fully understand the management and

disease prevention measures required to minimize mortality rates and ensure that rabbits reach the required live weights required for slaughter at three months of age. Concerning marketing, rabbits are not widely eaten in the project area at present and would have to be transported over quite long distances to city markets. For these reasons, only a small rabbit component would be introduced under the project in Liangshan. Two hundred households would each receive loans sufficient to buy 20 breeding does and four bucks, as well as cages and materials for suitable housing.

52. The creation of a successful and profitable household rabbit industry would be dependent upon private companies such as the Xichang Rabbit Breeding Farm for the processing and marketing of rabbit meat. The farm would supply breeding rabbits to farmers, provide transport to the processing plant, convert live rabbits into meat, and store and market the meat. The Livestock Bureau would have an important role in the selection of suitable poor farmers interested in borrowing from the project to establish rabbit breeding and fattening facilities, as well as providing the necessary technical base required for training potential farmers in disease prevention and management skills required for profitable rabbit production.

53. **Pasture Development.** The feed required to meet the additional demands from the various livestock species included in the project would be 427,000 tons of fresh pasture, 19,000 tons of corn grain, 3,000 tons of wheat bran and 4,000 tons of soybean cake (detailed in the Feed Balance Table). The county PMOs believe it will not be difficult to provide the additional feed required with the exception of soybean cake, most of which is imported from outside Sichuan. The additional quantities of soybean cake required, however, are quite small.

54. The Provincial government has been paying a lot of attention to the development of pasture and feed for livestock. It has provided substantial budget (Y 10 million/p.a.) for the development of grass varieties, grassland improvement and demonstration plots. In Liangshan, grassland improvement programs were carried out in Ganzi and Aba Autonomous Prefectures. The development of new grass seed varieties was carried out in Puge with the production of 400,000 kg of grass seeds each year. In Huili, there are 10,000 mu demonstration plots to show the rotation of grass and grain production. There were also pasture demonstration program in Yianbian.

55. Provincial government has recently introduced the idea of farmer responsibility for grazing land to solve the problem of grazing land development and maintenance. It has allocated communal grazing land surrounding villages to individual households, based on 50 mu/hh (3.3 ha) at high elevation and 20 mu/hh (1.33 ha) at the lower elevation. The certificate will specified the grazing right of the households for 50 years. As a result, the project would not finance the development of communal grassland as originally planned but would assist project farmers to develop 5 mu of grassland or grow other types of livestock feed.

56. A research program would be designed to demonstrate the economic benefits to villagers from pasture improvement. The increase in productivity of the improved pasture compared with native pasture, especially during periods of feed shortage, and the variations in dry matter production/ha/month from improved pastures during the year would be major topics of the research program. Optimum improved pasture species, fertilizer rates, timing and methods of sowing and of maintenance fertilizer applications would also be included in the research program. Demonstration plots would be developed in three counties and would also be used for training.

57. **Livestock Support.** Livestock support would include training, research and drug and veterinary supplies. Training would be provided to farmers and technicians to train them in various aspects of wool processing, including washing and sorting wool into various classes before marketing. Women farmers would be particularly targeted. Training for technicians would be limited to study tours and training within China, except for sheep and wool, which would also include training, possibly in Australia or New Zealand in wool marketing, harvesting, classing, husbandry, management and temperate pasture production. Research programs would include pasture demonstrations in selected villages within the

project area (referred to previously) as well as various aspects of livestock production covering the five species of livestock covered in the livestock component. A number of village training centers would be established within the project area for training farmers. Project investment would also include the refurbishment and supply of drugs and chemicals to a number of township veterinary stations and the supply of a number of vehicles for livestock support services.

Project Component 6 - Agro-Processing US$12.72 million (5% of total project cost)

58. The agro-processing component aims to provide essential linkages between production, processing and marketing of farm produce and cash crops generated under the project. The project would finance a rice processing mill, a seed processing plant, a new wholesale market, and three ventilated fruit stores. Two of these sub-components, Xichang rice mill and Xichang seed company, will be part of a new grain products business park to be setup on the outskirts of Xichang. A major shareholder in this business park would be Panxi Foods Ltd, a private sector food processing and marketing company with a wide distribution network in southern China. This company will take a shareholding in both the seed mill and rice mill, and will construct (at its own cost) an animal feed mill to utilize the by-products from the two plants.

59. **Rice mill.** The project would support the construction of a new rice-processing mill at Xichang grain products business-park, in conjunction with the grain base development. The mill would have capacity to process 29,790 t/y of paddy into polished rice for sale to urban centers, and would improve the recovery and utilization of bran, husk and rice polish as by-products. The processing plant would be equipped under the project with three modern rice processing lines of 3 t/h capacity and be provided with storage buildings, small administrative offices and trucks. The mill would buy field-dried paddy as raw material and the process lines would remove husk, bran and broken rice as separate by-products and produce fine polished rice as the finished product. The mill would also process fine aromatic rice in small quantities. This investment would provide hygienic processing and packing facilities with reliable product and by-product recovery that would have sufficient capacity for future demand. This would link well with the crop development component of the project and would provide added value from products and by-products. The capital investment in the mill would be Y 21.407 million, plus working capital of Y 9.66 million.

Investment in Xichang Rice Mill 9 t/h capacity (3 lines of 3 t/h)	
	Y'000
Land	4,400.0
Civil work	966.0
Buildings	3,724.0
Equipment	8,508.0
ICB	
NCB	912.0
Vehicles	120.0
Training	30.0
Others	721.0
Fees	2,026.3
Customs duty	0.0
Working capital	9,660.0
Total 万'000	**31,067.0**

60. **Seed processing proposals.** The project would support the construction of one seed processing plant at Xichang grain products business-park in conjunction with grain base development. The plant would be equipped under the project with modern seed processing lines and provided with seed storage buildings, an administrative office, a laboratory, a classroom, and essential utilities. The seed company has commercialized its activities by forming a joint stock company between Panxi Food Company (70%) a private sector food processor, and Dechang County Seed Company. This proposal would link well with the crop development component of the project and would provide added value from products and by-products.

61. The intake processing capacity of the seed processing plant would be 3 t/h, processing mainly rice, wheat and maize, with small volumes of vegetable seeds. This sub-component would provide 5,970 t/y of high quality seeds to the project area, thereby reducing the need to import seeds from other provinces, and providing local control over the quality and quantity of fine seeds available to project farmers. The capital investment in this sub-component would be Y 16.118 million plus Y 13.61 million for working capital.

Investment in Xichang Seed Mill 3 t/h capacity	
	Y'000
Land	4,350.0
Civil work	979.0
Buildings	4,106.0
Equipment	3,609.0
ICB	
NCB	709.0
Vehicles	150.0
Training	216.0
Others	951.0
Fees	1048.1
Customs duty	0.0
Working capital	13,610.0
Total Y'000	**29,728.1**

62. **Xichang Wholesale Market.** The existing fruit and vegetable wholesale market at Xichang is located in the city center, and is congested and enclosed by other buildings. It would be difficult and expensive to expand or improve this market in its present location, but the existing market cannot cope adequately with existing market volumes, and is seen as a constraint to expansion of production and marketing of fruit and vegetables in the area. The project sponsors propose, therefore, to construct a new market about 0.5 km from the town center, that would adequately handle both the existing and planned incremental production of fruit and vegetable. The new market would be constructed on a 30 mu site and could handle over 900 tons per day of agricultural and horticultural produce. It would be the major wholesale market in the Anning Valley, and would be owned by Xichang Municipal Government. The market would be operated by market traders and administered by a market manager. Traders from Chengdu, Kunming, Chongqing and other major cities would be given generous incentives to take up trading activities at the market and to move permanently to Xichang. The incentives would include a residential license, housing permit, educational arrangements for traders children, and tax free status for the first six months of operation. A communications and information room would connect the market to other related markets in the region.

63. **Wholesale Market Design.** The market would be located on a 30 mu site located 0.5 Km from the down-town area of Xichang, and would include an integrated cool store and ventilated store for fruit and vegetables. The market shed would be an open structure based on 20m x 20m building grids, with a light weight multiple tetra-formed roof. The overall market structure area would be approximately 7,000 m^2 including 6,000 m^2 covered market floor. The building would be completely open at both ends, but closed at both sides by a row of stores and offices running the length of the building. These would be arranged with cool stores and ventilated stores at ground level, with offices and communications center above. Four site entrances would each be 30 m wide, and the front boundary would incorporate a block of shops and offices. The rear boundary would incorporate public toilets, and trash removal bins. The capital investment would be Y 26.3 million and incremental working capital Y 0.86 million.

Investment in Xichang Wholesale Market rehabilitation and new cold store 900 t/d market capacity	
	Y'000
Land	6,000.0
Civil work	2,402.0
Buildings	8,026.0
Equipment	1,962.4
ICB	
NCB	3,453.1
Vehicles	120.0
Training	520.0
Others	1,292.7
Fees	2,489.6
Customs duty	0.0
Working capital	860.0
Total ¥'000	**27,162.3**

64. **Ventilated Fruit Stores.** Three new ventilated fruit stores of 500 m^2 storage area would be designed and constructed in Yanbian, Renhe and Miyi counties of Panzhihua Municipality. Each would be equipped with electrical exhausted fans and some air conditioning. The designs have been discussed with the project sponsors, and investment costs have been based on previous Bank experience in other projects. The capital investment in this sub-component would be Y 5.51 million plus working capital of Y 1.52 million for the three stores.

Investment in Panzhihua Three Ventilated Fruit Stores 3 x 200 ton capacity	
	Y'000
Land	1,080.0
Civil work	426.0
Buildings	1,622.0
Equipment	0.0
ICB	
NCB	1,104.0
Vehicles	450.0
Training	0.0
Others	303.0
Fees	521.1
Customs duty	0.0
Working capital	1,520.0
Total ¥'000	**7,026.1**

Project Component 7 - Institutional Strengthening US$8.9 million (4% of total project cost)

65. **Institutional Strengthening**. This component includes support services for crop, orchard, and livestock development and project management. The project would support agricultural and livestock support services by financing 35 agricultural township extension stations in Liangshan prefecture and 25 stations in Panzhihua Municipal, 10 livestock township training centers in Liangshan and 2 centers in Panzhihua, 50 township veterinary stations in Liangshan and 16 stations in Panzhihua. For project management, it would support 9 project management offices (PMO) in Liangshan, and 14 PMO for Panzhihua municipal, detail is shown in the following table:

	Liangshan Prefecture		Panzhihua Municipal	
	No. of Unit	Costs (Y'000)	No. of Units	Costs (Y'000)
Agri. Township Extension Station	35	2,595	25	1,500
Live. Township Training Center	10	617	2	133
Live. Township Veterinary Station	50	2,450	16	784
Total Support Services	95	5,662	43	2,417
Agricultural PMO /1	7	16,022	6	10,130
Orchard PMO	1	8,053	1	11,998
Vegetable PMO /2			6	5,821
Livestock PMO	1	5,459	1	1,107
Total PMO	9	29,534	14	29,056

/1 In Liangshan, one PMO at prefecture level and one for each of six project counties.
In Panzhihua, one PMO at municipal level and one for each of five project counties.
/2 In Panzhihua, one PMO at municipal level and one for each of five project counties.

66. For the agricultural township extension stations, the major support from the project would be improving existing building for office and classroom, 100 m^2 for each station, simple equipment for extension use at farm level, e.g., motor sprayer, mobile water pump, water hose, and some laboratory equipment, e.g., balance scale, dryer, cultivated box, and etc.

67. For the livestock township training center, the project would support a small classroom (50 m^2)for each center with training equipment, (e.g., projector, TV set, bookcase, filing cabinet) and some tables and chairs.

68. For the livestock township veterinary stations, the project would provide some support to maintain the existing buildings (60 m^2 for each station) and build an AI room (60 m^2 for each station), and provide equipment for strengthening their services, e.g., AI equipment (liquid ammonia tanks, disinfecting machine, and refrigerator), microscope, medicine cabinet, emergency kit, other medical instrument, and some office furniture.

69. The project would support the project management office (PMO) in strengthening its staffing and facilities for providing good project management during implementation. Agricultural PMO in both Liangshan and Panzhihua would include prefecture/municipal and county levels, Vegetable PMO, which would include municipal and county level PMOs. PMO at all levels would receive training. Training would also be provided to technicians and farmers (including women). Research, extension, design costs for these components would be included in the project investment costs. Office equipment (computer, photocopy machine, and facsimile machine), training equipment, office furniture, and vehicles would also be provided. Project management fee, project monitoring and evaluation, and environmental monitoring fee are included in the PMO budget.

Annex 3
Anning Valley Agricultural Development Project
Estimated Detailed Project Costs a/

	(Local '000)					(US$ '000)				
	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
A. Water Resource Development										
Manshuiwan Scheme	344,316.7	231,825.5	576,142.2	40	34	41,483.9	27,930.8	69,414.7	40	34
Huangqiao Scheme	70,454.3	44,206.7	114,661.0	39	7	8,488.5	5,326.1	13,814.6	39	7
Shengli Scheme	32,418.8	18,730.0	51,148.8	37	3	3,905.9	2,256.6	6,162.5	37	3
Subtotal Water Resource Development	447,189.8	294,762.2	741,952.0	40	43	53,878.3	35,513.5	89,391.8	40	43
B. Crop Development										
Liangshan Grain Production	46,525.1	19,790.5	66,315.6	30	4	5,605.4	2,384.4	7,989.8	30	4
Panzhihua Grain Production	62,112.3	46,032.1	108,144.4	43	6	7,483.4	5,546.0	13,029.4	43	6
Panzhihua Vegetable Production	45,884.6	31,994.6	77,879.2	41	5	5,528.3	3,854.8	9,383.0	41	5
Subtotal Crop Development	154,522.0	97,817.2	252,339.2	39	15	18,617.1	11,785.2	30,402.3	39	15
C. Sericulture Development										
LS HH Silk Cocoon Production	51,628.2	41,217.7	92,845.9	44	5	6,220.3	4,966.0	11,186.2	44	5
Cocoon Drying Center - LS	53,011.0	21,226.2	74,237.2	29	4	6,386.9	2,557.4	8,944.2	29	4
Silk Reeling Mills - LS	14,349.1	7,315.3	21,664.4	34	1	1,728.8	881.4	2,610.2	34	1
PZH HH Silk Cocoon Production	22,125.4	17,665.4	39,790.8	44	2	2,665.7	2,128.4	4,794.1	44	2
Cocoon Drying Center - PZH	22,041.8	7,796.1	29,837.9	26	2	2,655.6	939.3	3,594.9	26	2
Silk Reeling Mills - PZH	6,439.4	2,852.9	9,292.3	31	1	775.8	343.7	1,119.6	31	1
Subtotal Sericulture Development	169,594.9	98,073.5	267,668.4	37	16	20,433.1	11,816.1	32,249.2	37	16
D. Orchard Development										
Liangshan Fruit Nursery	613.1	409.2	1,022.3	40	-	73.9	49.3	123.2	40	-
Liangshan Pomegranate Orchards	29,354.5	17,286.3	46,640.8	37	3	3,536.7	2,082.7	5,619.4	37	3
Liangshan Orchard House	11,057.3	3,069.0	14,126.3	22	1	1,332.2	369.8	1,702.0	22	1
Panzhihua Nursery	2,337.1	1,977.0	4,314.1	46	-	281.6	238.2	519.8	46	-
Panzhihua Mango Orchards	48,463.1	28,029.6	76,492.6	37	4	5,838.9	3,377.1	9,216.0	37	4
Panzhihua Longan Orchards	16,407.8	9,311.7	25,719.6	36	2	1,976.8	1,121.9	3,098.7	36	2
Panzhihua Orchard House	14,572.0	5,676.4	20,248.4	28	1	1,755.7	683.9	2,439.6	28	1
Subtotal Orchard Development	122,804.8	65,759.3	188,564.1	35	11	14,795.8	7,922.8	22,718.6	35	11
E. Livestock Development										
Sheep & Goats Production – Liangshan	27,601.2	26,794.8	54,396.0	49	3	3,325.4	3,228.3	6,553.7	49	3
Duck Production – Liangshan	7,858.3	9,798.8	17,657.0	55	1	946.8	1,180.6	2,127.3	55	1
Rabbit Production – LS	546.0	986.0	1,532.0	64	-	65.8	118.8	184.6	64	-
Sheep & Goats Production – Panzhihua	11,262.0	10,902.4	22,164.4	49	1	1,356.9	1,313.5	2,670.4	49	1
Subtotal Livestock Development	47,267.4	48,482.0	95,749.4	51	6	5,694.9	5,841.2	11,536.1	51	6
F. Agro-processing										
Rice Processing Mill – LS	20,973.7	10,067.6	31,041.2	32	2	2,526.9	1,213.0	3,739.9	32	2
Seed Processing Center – Liangshan	23,682.3	6,045.2	29,727.5	20	2	2,853.3	728.3	3,581.6	20	2
Fruit Ventilated Store – Panzhihua	5,099.6	1,926.0	7,025.6	27	-	614.4	232.1	846.5	27	-
Fruit Wholesale Market – LS	18,821.9	8,340.3	27,162.2	31	2	2,267.7	1,004.9	3,272.6	31	2
Subtotal Agro-processing	68,577.4	26,379.1	94,956.5	28	6	8,262.3	3,178.2	11,440.5	28	6
G. Institutional Strengthening										
Extension Services – Liangshan	3,055.1	2,606.9	5,662.0	46	-	368.1	314.1	682.2	46	-
Project Management Office – Liangshan	17,240.5	12,293.1	29,533.6	42	2	2,077.2	1,481.1	3,558.3	42	2
Extension Services – Panzhihua	1,330.9	1,086.1	2,417.0	45	-	160.3	130.9	291.2	45	-
Project Management Office – Panzhihua	19,754.7	9,301.3	29,056.0	32	2	2,380.1	1,120.6	3,500.7	32	2
Subtotal Institutional Strengthening	41,381.1	25,287.4	66,668.6	38	4	4,985.7	3,046.7	8,032.4	38	4
Total BASELINE COSTS	1,051,337.4	656,560.7	1,707,898.1	38	100	126,667.2	79,103.7	205,770.9	38	100
Physical Contingencies	74,585.2	66,862.1	141,447.3	47	8	8,986.2	8,055.7	17,041.8	47	8
Price Contingencies	156,460.0	87,791.6	244,251.6	36	14	10,584.8	5,519.0	16,103.8	34	8
Front-end Fee		7,470.0	7,470.0				900.0	900.0		
Total Project Costs	1,282,382.6	818,684.4	2,101,067	39	123	146,238.1	93,578.4	239,816.5	39	116

a/ The total project cost, including physical and price contingencies, is estimated at $239.8 million of which $93.6 million or 39% of the total is foreign exchange. With the exchange rate of Y8.3 to $1, the total investment cost is equivalent to Y2,101.1 million. The cost estimates are based on quantities derived from the preliminary designs and unit prices prevailing in 1997. The total costs exclude taxes. Physical contingencies are estimated at 15 percent for equipment, 10 percent for civil works and vehicles, 5 percent for others, and no physical contingency is applied to land, training, working capital, and unskilled labor. Price contingencies are based on annual international price escalation rates for goods, works and services. Expressed in US dollar they are 4.8 percent for 1999, and 2.4 percent for the years thereafter. Price contingencies for cost incurred in Yuan are based on annual price escalation rates of 10 percent for 1999, and 5 percent for the years thereafter. No price contingency is applied to land, working capital, and labor. Total contingencies are 16 percent of base costs in US dollar and 23 percent in Yuan.

Estimated Project Costs

	(Local '000)					(US$ '000)				
	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
I. Investment Costs										
A. Land Acquisition	40,232.0	-	40,232.0	-	2	4,847.2	-	4,847.2	-	2
B. Civil Works										
Irrigation Civil Works	301,856.5	246,973.5	548,830.0	45	32	36,368.3	29,755.8	66,124.1	45	32
Works - Ditches	43,308.4	35,434.1	78,742.5	45	5	5,217.9	4,269.2	9,487.0	45	5
Field Work	66,816.5	54,668.1	121,484.6	45	7	8,050.2	6,586.5	14,636.7	45	7
Other Works	14,890.8	12,183.3	27,074.1	45	2	1,794.1	1,467.9	3,261.9	45	2
Buildings	77,387.2	63,316.8	140,704.1	45	8	9,323.8	7,628.5	16,952.3	45	8
Road	15,676.5	12,826.2	28,502.7	45	2	1,888.7	1,545.3	3,434.1	45	2
Subtotal Civil Works	519,935.8	425,402.1	945,337.9	45	55	62,642.9	51,253.3	113,896.1	45	55
C. Equipment										
Irrigation Equipment	24,973.8	37,460.7	62,434.5	60	4	3,008.9	4,513.3	7,522.2	60	4
Agricultural Equipment	247.5	247.5	495.0	50	-	29.8	29.8	59.6	50	-
Livestock Equipment	577.3	577.3	1,154.5	50	-	69.5	69.5	139.1	50	-
Processing Equipment	2,494.6	22,451.0	24,945.6	90	1	300.5	2,704.9	3,005.5	90	1
Office Equipment	2,022.9	4,720.1	6,743.0	70	-	243.7	568.7	812.4	70	-
Lab Equipment	267.5	624.2	891.7	70	-	32.2	75.2	107.4	70	-
Auxiliary Equipment	7,040.6	5,760.5	12,801.0	45	1	848.3	694.0	1,542.3	45	1
Other Equipment	16,876.6	11,251.1	28,127.7	40	2	2,033.3	1,355.6	3,388.9	40	2
Equipment Installation	2,370.1	1,939.1	4,309.2	45	-	285.5	233.6	519.2	45	-
Freight & Insurance	399.2	3,592.9	3,992.1	90	-	48.1	432.9	481.0	90	-
Spare Parts	169.1	958.3	1,127.4	85	-	20.4	115.5	135.8	85	-
Commissioning	563.2	460.8	1,024.0	45	-	67.9	55.5	123.4	45	-
Subtotal Equipment	58,002.3	90,043.5	148,045.7	61	9	6,988.2	10,848.6	17,836.8	61	9
D. Vehicles										
Trucks	776.0	6,984.0	7,760.0	90	-	93.5	841.4	934.9	90	-
Utility Vehicles	492.0	4,428.0	4,920.0	90	-	59.3	533.5	592.8	90	-
Other Vehicles	201.0	1,809.0	2,010.0	90	-	24.2	218.0	242.2	90	-
Subtotal Vehicles	1,469.0	13,221.0	14,690.0	90	1	177.0	1,592.9	1,769.9	90	1
E. Training & TA										
Domestic Training	11,568.8	7,712.6	19,281.4	40	1	1,393.8	929.2	2,323.1	40	1
International Training & TA	256.0	2,304.0	2,560.0	90	-	30.8	277.6	308.4	90	-
Local Consultant	6,492.0	-	6,492.0	-	-	782.2	-	782.2	-	-
Scientific Research	11,226.3	-	11,226.3	-	1	1,352.6	-	1,352.6	-	1
Project Monitoring & Evaluation	4,599.1	-	4,599.1	-	-	554.1	-	554.1	-	-
Subtotal Training & TA	34,142.2	10,016.6	44,158.8	23	3	4,113.5	1,206.8	5,320.3	23	3
F. Materials										
Breeding Stock (Liv.)	32,867.0	32,867.0	65,734.0	50	4	3,959.9	3,959.9	7,919.8	50	4
Materials	17,198.3	40,129.3	57,327.6	70	3	2,072.1	4,834.9	6,906.9	70	3
Chemicals	195.9	1,763.3	1,959.2	90	-	23.6	212.4	236.1	90	-
Manure	22,980.4	-	22,980.4	-	1	2,768.7	-	2,768.7	-	1
Diesel & Oil	445.5	364.5	810.0	45	-	53.7	43.9	97.6	45	-
Seed & Seedling	16,450.7	-	16,450.7	-	1	1,982.0	-	1,982.0	-	1
Subtotal Materials	90,137.8	75,124.1	165,261.9	45	10	10,860.0	9,051.1	19,911.1	45	10
G. Chemical Fertilizer										
Fertilizer - Urea	1,273.6	11,462.7	12,736.3	90	1	153.4	1,381.0	1,534.5	90	1
Fertilizer - Phosphate	265.3	2,387.6	2,652.9	90	-	32.0	287.7	319.6	90	-
Fertilizer - Compound Fertilizer	943.6	8,492.7	9,436.4	90	1	113.7	1,023.2	1,136.9	90	1
Fertilizer for Balance & Adjustment	76.3	686.3	762.6	90	-	9.2	82.7	91.9	90	-
Other Fertilizer	154.7	1,391.9	1,546.5	90	-	18.6	167.7	186.3	90	-
Subtotal Chemical Fertilizer	2,713.5	24,421.2	27,134.7	90	2	326.9	2,942.3	3,269.2	90	2
H. Labor										
Unskilled Labor	32,749.5	-	32,749.5	-	2	3,945.7	-	3,945.7	-	2

I. Others										
Resettlement	21,420.0	-	21,420.0	-	1	2,580.7	-	2,580.7	-	1
Design	42,775.5	18,332.4	61,107.9	30	4	5,153.7	2,208.7	7,362.4	30	4
Supervision	14,040.0	-	14,040.0	-	1	1,691.6	-	1,691.6	-	1
Project Management & Monitoring	8,515.8	-	8,515.8	-	-	1,026.0	-	1,026.0	-	-
Others	8,432.0	-	8,432.0	-	-	1,015.9	-	1,015.9	-	-
Environmental Monitoring	11,865.6	-	11,865.6	-	1	1,429.6	-	1,429.6	-	1
Interest during Construction	20,890.4	-	20,890.4	-	1	2,516.9	-	2,516.9	-	1
Subtotal Others	127,939.3	18,332.4	146,271.7	13	9	15,414.4	2,208.7	17,623.1	13	9
J. Working Capital	84,022.0	-	84,022.0	-	5	10,123.1	-	10,123.1	-	5
Total Investment Costs	984,851.4	663,052.7	1,647,904.1	40	96	118,656.8	79,885.9	198,542.7	40	96
II. Recurrent Costs										
A. O&M of Dam	7,710.0	-	7,710.0	-	-	928.9	-	928.9	-	-
B. O&M of Arterial & Branch Canals	13,990.0	-	13,990.0	-	1	1,685.5	-	1,685.5	-	1
C. O&M of Laterals, Farm Ditches etc.	1,270.0	-	1,270.0	-	-	153.0	-	153.0	-	-
E. Management	2,650.0	-	2,650.0	-	-	319.3	-	319.3	-	-
F. Maintenance of Terrace	34,374.0	-	34,374.0	-	2	4,141.4	-	4,141.4	-	2
Total Recurrent Costs	59,994.0	-	59,994.0	-	4	7,228.2	-	7,228.2	-	4
Total BASELINE COSTS	1,051,337.4	656,560.7	1,707,898.1	38	100	126,667.2	79,103.7	205,770.9	38	100
Physical Contingencies	74,585.2	66,862.1.	141,447.3	47	8	8,986.2	8,055.7	17,041.8	47	8
Price Contingencies	156,460.0	87,791.6	244,251.6	36	14	10,584.8	5,519.0	16,103.8	34	8
Front-end Fee		7,470.0	7,470.0				900.0	900.00		
Total Project Costs	1,282,382.6	818,684.4	2,101,067	39	123	146,238.1	93,578.4	239,816.5	39	116

Annex 4
Anning Valley Agricultural Development Project
Cost Benefit Analysis Summary

('000Yuan, constant 1997)

	Present Value of Flows		Fiscal Impact	
	Economic Analysis	Financial Analysis[2]	Revenues	Subsidies
Benefits	1,600,772	799,073	175	123
Costs	648,635	628,244		
Net Benefits:	709,556	617,676		
IRR:	25%	18%		

Financial and Economic Analysis

The major benefits of the project would come from incremental agricultural and livestock production and the incremental value of processed products. With the development of water resources, the project would increase the supply of water to irrigate 16,650 ha of existing fields and 3,150 ha of newly developed marginal land. The incremental production would come from the expansion of cultivable land, increased crop yields and cropping intensity and the improvement of new production technology. In total, annual incremental production of grain and vegetables would be 92,160 and 70,500 tons, respectively. Incremental fruit production would come from both the development of new orchards and the improvement of existing orchards. In total, at full development, orchards under the project would produce 41,525 tons of high-quality fresh fruit annually. Incremental livestock production under the project would be 21,600 tons of meat (beef, mutton, goat and duck) annually. Additional value-added would come from rice milling, fruit grading, silk reeling, electricity, and raw water for domestic and industrial use. Detailed financial and economic analysis was undertaken for all components.

Financial analysis. Financial analysis was carried out based on one-hectare models for crop and orchard development components. Livestock models were used for the livestock development component. Incremental costs and benefits were used for improved land, and total costs and benefits were used for new land. Financial analysis was carried out for the sericulture and agro-processing components as an integrated system from production to processing, taking into account all the production and processing costs and valuing the benefits from final processed products. In the crop and livestock models, technical and institutional strengthening costs are not included, since farmers will pay for water, veterinary services and agriculture taxes. Investment costs and operating costs are valued at 1997 prices. Farm labor is valued at Y 10/person-day. Prices for output are prevailing market prices. Financial Rates of Return (FRR) were calculated for the water resource, crop, livestock, sericulture and agro-processing components as follows:

[2] If the difference between the present value of financial and economic flows is large and cannot be explained by taxes and subsidies, a brief explanation of the difference is warranted, e.g., "The value of financial benefits is less than that of economic benefits because of controls on electricity tariffs."

Water Resources Development Component. Financial analysis was carried out for the three project water resource schemes - Manshuiwan, Huangqiao and Shengli. The investment cost is mainly for infrastructure and amounted to over 40 percent of total project investment costs. The benefits would be derived from water supply for urban, industrial and agricultural uses and electricity.

(a) Manshuiwan Water Resource Development. Investment costs for Manshuiwan include civil works, equipment, engineering and administration, resettlement and farmer compensation, the irrigation distribution system and on-farm works. Operating costs include recurrent costs for pumping stations, headreach, power station, canal system, and related management. The subcomponent would provide irrigation water to 1,633 ha of reclaimable wasteland and 12,767 ha of existing cultivated land, which either rely on rainfall or are partially irrigated. Crops are grains, vegetables, oil crops and sugarcane. Manshuiwan would also provide about 380,000 m^3/day of raw water for domestic and industrial use and generate 116,000 MWh of electricity per year through the 18 MW Huangtupo Hydro Power Station, which would be constructed under the project.

Revenues would be generated from net income from crop production on newly reclaimed land and incremental income from improvement of existing land and water and power charges. Water charges would be Y 0.6/m^3 for industrial use, Y 0.5/m^3 for rural use, and Y 0.4/m^3 for urban use. Power charges would be Y 0.45/kWh. Revenues from crop production would come in Year 4 and would be in full production in Year 7. Revenues from water and power charges would be generated from Year 3 onward, with the rate progressively increasing by 10 percent per annum reaching the full revenue level in Year 7. Based on these assumptions, the FRR for the Manshuiwan Water Scheme is calculated to be 14 percent.

(b) Huangqiao Water Resource Development Subcomponent. Huangqiao Dam would be constructed under the project. The benefits would be similar to those of Manshuiwan providing water for urban and agricultural use, as well as for electricity. Investment costs include civil works for construction of the dam, main and branch canals, power station, and water supply system. Operating costs include recurrent costs for irrigation system maintenance and operations, engineering and farm operations. Huangqiao Dam would provide irrigation water to 487 ha of reclaimable wasteland and 2,193 ha of existing cultivated land (which presently rely on rainfall or are partially irrigated). It also would sell 1.35 Mm^3 of treated water to Miyi County and sell about 3.5 MWh of electricity to the county's power company.

Revenues would come from incremental crop production and income from water and electricity charges in the same manner and time frame as for Manshuiwan. Based on the above assumptions, the FRR for Huangqiao is estimated at 17 percent.

(c) Shengli Water Resource Development Subcomponent. Shengli Dam was completed in 1995. The project would support the completion of the infrastructure facilities, which would provide irrigation to about 2,724 ha of mainly steep lands, including 1,021 ha of current wasteland and 1,703 ha of cultivated land that now rely on rainfall. Revenues for Shengli would be from incremental crop production and water charges. The FRR is estimated at 27 percent.

Crop Development. This component includes development of grain production in Liangshan and Panzhihua and vegetable production in Panzhihua. The project would develop 18,160 ha for grain production and 4,200 ha for vegetable production. Investment costs include land reclamation, existing land improvement, technical extension and seed propagation. The one-

hectare models were specified for different types of investment; one for land reclamation and another for the improvement of existing land. In the Panxi project area, double cropping is specified since water supply is expected to be reliable. The cropping system in Liangshan would be paddy followed by wheat and in Panzhihua paddy followed by wheat or corn. Vegetable production would only be in Panzhihua, since vegetables can be shipped out of the region in winter. Like grain production, vegetable production under the project would be located both on new reclaimed land and existing land. In the financial analysis, all investment and operating costs were taken into account. Investment cost includes civil works for land reclamation, land improvement, lateral and on-farm works, technical extension and seed propagation. Operating costs include fertilizer, chemicals, irrigation water, farm tools, labor, agricultural taxes and other costs. Incremental revenue for new reclaimed land would start in Year 3 and reach maximum in Year 6. Incremental revenue was used for existing land improvement.

Based on these assumptions, the financial analysis for crop production shows an FRR of 42 percent for Liangshan and 34 percent for Panzhihua. In Liangshan, investment in land improvement yields a higher FRR than investment in newly reclaimed land. The FRR for the former is estimated at 50 percent compared to 25 percent for the latter. A similar pattern prevails in Panzhihua, where newly reclaimed land has FRRs ranging from 19 percent to 22 percent depending on cropping pattern. Improvement of existing land has FRRs ranging from 57 percent to 58 percent depending on cropping pattern. The FRRs for vegetables are estimated at 35 percent for newly reclaimed land and 46 percent for improved land.

Orchard Development. The project would develop 1,745 ha of hilly wasteland for pomegranate, mango and longan orchards. It would rehabilitate 300 ha of existing pomegranate orchards and develop mother tree gardens and nurseries to provide virus-free seedlings. Orchard houses would be built in each orchard for storage of tools, pumps and pipes and as a rest house for technicians, a training site for workers and farmers, and a fruit store during the harvest season.

Investment costs for orchards include costs for land development (explosive materials, machinery, works and labor), irrigation facilities (water ponds, pumps, pipes and equipment), and fertilizer (manure and chemical fertilizer). Maintenance costs after planting include fertilizer, chemicals, irrigation water, tools and labor. Farmers will have to pay special product taxes. For new orchards, revenue would come from fruit production, starting from Year 4 and reaching a maximum at full production in Year 7. During Years 1-6, income would be derived from intercropping. For rehabilitated orchards, incremental costs and benefits are used.

The orchard development component shows FRRs ranging from 19 percent to 49 percent for new orchards and 61 percent for pomegranate rehabilitated orchards. These FRRs vary with these ranges, depending on type of fruit, irrigation mode and difficulty of proposed land development. The variation in benefits also depends on the type of fruit; for example, mango has lower benefits than longan and pomegranate.

Livestock Development. The livestock development component is the major activity under the project for poverty alleviation. The project would assist 38,545 households to earn additional income by producing ducks, goats, sheep, cattle and rabbits. In order to provide good breeds, duck breeding farms and ram breeding farms would be established under the project. Village training centers and township veterinary stations would provide support services to improve traditional raising practices.

Investment costs include the purchase of breeding stock, construction of pens and provision of concentrate feed. Operating costs for households include feed consumption, veterinary cost,

tools, and utilities. Benefits would come from incremental livestock production valued at market prices. The analysis shows high FRRs for wool sheep (45 percent), duck (52 percent) and rabbits (37 percent), due to the high value of the products. The FRR for goat production is estimated at 42 percent, higher than most of the other livestock operations, due to the low cost of production.

Sericulture. Sericulture is designed as a vertically integrated system based on the identified market demand for reeled silk and dried cocoons for export. This includes all activities in the sericulture system including mulberry production (2,666 ha), silkmoth egg production (166,656 boxes/y), young silkworm farming (694 households), cocoon farming (23,808 households), cocoon drying centres (22) and reeling mills (4). Farm households participate in mulberry leaf production, young worm raising and cocoon raising, largely as a supplementary farming activity since mulberry is grown on the periphery of plots rather than as a main crop.

Investment costs for egg grainage, drying centres and reeling mills include civil works (land preparation and buildings), equipment, vehicles, training, technical assistance, design costs, overhead during construction, taxes and duties, and working capital. Operating costs include the variable cost of raw materials and packing materials, casual labor, and utilities and fixed costs covers workers salaries and welfare, office overheads, insurance, maintenance of buildings, equipment and vehicles, and marketing promotion.

Investment costs for households would be limited to provision of materials for civil works (power and water supply, drainage and disinfectant pool), rehabilitation of existing worm and cocoon houses, cocoon raising tools and equipment, and fees associated with participation in the project. Operating costs include raw materials including mulberry leaf, young silk worms, silk worm rearing costs, consumables and utilities.

Financial analysis has been carried out for sericulture sub-components and the estimated FRRs for reeling mills, drying centres and cocoon farmers range from 21 percent to 43 percent. Young worm farming would produce a low FRR (about 18%), but these farmers a) provide a service to cocoon farmers in their community, and b) also produce cocoons at a high FRR of 43%. Their combined operation of worm raising and cocoon raising provides an acceptable return of about 26%.

Agro-processing. There are four processing sub-components: a rice mill, a seed processing mill, a wholesale market and three fruit stores. A total of six enterprises would participate in the project. Investment costs include civil works (land preparation and buildings), equipment, vehicles, training and technical assistance, design costs, overhead during construction, taxes and duties, and working capital. Operating costs include variable costs for raw materials and packing materials, casual labor, utilities, and fixed costs for workers salaries and welfare, office overheads, insurance, maintenance of buildings, equipment, and vehicles, and marketing promotion. Financial analyses were undertaken for each enterprise. The FRRs range from 20 percent to 23 percent before tax and debt servicing.

Project FRR. Financial analysis was also carried out for the total project. Assuming that the cost and benefit streams would be as specified above, the FRR of the project is estimated at 18 percent. Detailed analysis can be found in the Project Files.

Economic Analysis. Economic analysis has been carried out for all components (water resources, crop, orchard, livestock, sericulture, agro-processing) and for the project as a whole. Investment costs include all the investment costs that would be incurred under the project, including costs for institutional strengthening, research, training, and crop and livestock extension. Operating costs include all materials required for production including labor. All costs are valued at constant 1997 border prices and adjusted for physical contingencies. Taxes and subsidies and interest payment are excluded.

World Bank price projections of export prices actually realized by China were used to estimate farm gate economic prices for traded goods in constant 1997 terms. Economic prices for non-traded goods were estimated using conversion factors. These conversion factors were estimated based on an analysis of the deviation of social opportunity costs from the actual financial prices prevailing in Sichuan caused by tax and price distortions in non-traded goods. All economic values were converted to local currency at the prevailing official exchange rate of Y 8.3 to US$1. Water costs are estimated at Y 0.1/m^3. Farm and unskilled labor is valued at Y 8.0 per day, 80 percent of the prevailing average wage rate of about Y 10 in the project area, representing the opportunity cost of labor in the project area.

The results of the analysis show that the project has acceptable economic rates of return (ERRs) for all subcomponents and for the project as a whole. The ERR for the water resources development component is estimated at 17 percent. The ERRs for Manshuiwan is estimated at 14 percent, and Huangqiao is estimated at 17 percent, while the ERR for Shengli is estimated at 26 percent. Water resource development always has high investment costs; however, it has long term benefits and these ERRs are higher than usual for water resources development. The high ERR for Shengli Dam reflects the benefits accrued from the sunk cost of not having to invest in the dam.

Investment in grain and vegetable development shows a high ERR of 39 percent. The project would enable substantial incremental yield and production from double cropping and the high value of vegetables. Investment in orchard development has an ERR of 29 percent, lower than for grain production, since the initial investment in orchard development is higher than for grain and benefits are delayed. This ERR is similar to those for comparable investments in orchards in other projects. The livestock ERR is estimated at 19 percent, a rate which is lower than for crop and orchard development but acceptable for household livestock production. Sericulture and other agro-processing components show ERRs of 29 percent and 20 percent, respectively.

Total Project. Based on the above analysis, the project's ERR is 25 percent. Its net present value (at a 12 percent discount rate) is Y 1.60 billion. Detailed analysis can be found in Annex 4, Table 1.

Risk and Sensitivity Analysis

The major risk in this project is the possible delay in completing the Daqiao Dam. If there were such a delay, it would affect the project's crop production. A delay of project implementation by one year would reduce the ERR to 24 percent. Another element of risk arises from changing markets and input and output prices. Sensitivity analysis was carried out to evaluate the sensitivity of the project's ERR to price and cost variations. The project is not very sensitive to an increase in investment and operating costs. If the investment cost were to increase by 10 percent, the ERR would be reduced to 23 percent; if operating costs were to increase by 10 percent, the ERR would be reduced to 22 percent. The livestock and agro-processing components are sensitive to output prices; a 10 percent fall in prices of commodities in these two components would reduce their ERRs to 12 and 10 percent, respectively. However, an analysis of switching values shows that the project ERR is robust. It would take a reduction in total benefits of 24 percent or an increase in total costs of 32 percent to bring the project ERR down to 12 percent. The results of the analysis are summarized in Annex 4 Table 2 and the detailed analysis can be found in the Project Files.

Annex 4
Table 1

Anning Valley Agricultural Development Project
Summary of Economic Analysis

Component	Annual Inc. Net Return (Y'000)	NPV @ 12% (Y'000)	Economic Rate of Return %
1. Water Resource			
- Manshuiwan Water Resource	134,468	81,479	14
- Huangqiao Irrigation	31,740	35,133	17
- Shengli Irrigation	35,789	76,897	26
Total Water Resource	201,998	238,130	17
2. Grain and Vegetables	153,654	523,544	39
3. Orchard Development	205,560	418,125	30
4. Livestock Development	32,273	61,458	19
5. Sericulture	85,226	287,019	29
6. Agro-processing	30,558	63,578	20
Total Project	709,556	1,600,772	25

Annex 4
Table 2

Anning Valley Agricultural Development Project
Summary of Sensitivity Analysis

Component	Base Case ERR	Switching Value @ 12%			Price Falls by 10%	Investment Costs Inc. by 10%	Operating Costs Inc. by 10%
		Costs	Benefits	Costs & Benefits			
1. Water Resource							
- Manshuiwan Water Resource	14	7.0	-6.5	3.3	11	13	13
- Huangqiao Irrigation	17	21.6	-17.8	21.6	13	15	15
- Shengli Irrigation	26	40.0	-28.8	16.8	22	25	24
Total Water Resource	17	22.4	-18.3	10.0	14	16	16
2. Grain and Vegetables	39	58.5	-37	22.7	31	35	36
3. Orchard Development	30	135	-56.9	43.0	27	27	29
4. Livestock Development	19	11.5	-10.3	5.4	9	17	14
5. Sericulture	29	19.3	-16.2	8.6	20	27	22
6. Agro-processing	20	8.6	-7.9	4.1	13	19	12
Total Project	25	32.2	-24.3	13.8	20	23	22

Annex 5
Anning Valley Agricultural Development Project
Financial Summary

Years Ending 2003
(US$ mil., constant 1997)

	Implementation Period					Operational Period				
	99	00	01	02	03	04	05	06	07	08
Project Costs										
Investment Costs	67.7	81.0	48.0	24.0	9.2					
Recurrent Costs	0.2	0.3	1.0	2.0	4.2	4.2	4.2	4.2	4.0	4.2
Total	67.9	81.3	49.0	26.0	13.4	4.2	4.2	4.2	4.0	4.2
Financing Sources (% of total project costs)										
IBRD/IDA	34.0/e	46.4	24.0	11.0	4.2					
Co-financiers										
Government										
Central	6.9	6.9	6.0	2.0						
Local	11.6	11.6	6.0	5.0	4.8					
User Fees/Beneficiaries	1.7	1.8	1.0	0.0	0.4					
Commercial Banks and	0.7	0.7	0.0	0.0	0.2					
Farmers	13.9	13.9	10.0	5.0	3.8					
Others										
Total	68.8	81.3	49.0	26.0	13.4	4.2	4.2	4.2	4.0	4.2

Main assumptions:
/a Financing plan is based on total Project costs by year including contingencies.
/b Bank's financing includes $90. million of IBRD and $30 million equivalent of IDA.
/c Government financing includes funds from various sources.
/d Beneficiaries' contributions are agro-processing own equity and farmers' labor.
/e Including US$0.9 million (i.e. 1% front-end fee on IBRD loan)

Annex 6
Anning Valley Agricultural Development Project
Procurement and Disbursement Arrangements

Procurement

The Bank's Procurement Guidelines (January 1995, revised January and August 1996 and September 1997) and the guidelines for Selection and Employment of Consultants (January 1997 and revised September 1997) would be applied to all Bank-financed procurement. The Bank-approved Chinese Model Bidding Documents would be adopted for all International Competitive Bidding (ICB) and National Competitive Bidding (NCB) for goods and works and the Standard Bid Evaluation Form would be used. In the case where no model documents exist, the Borrower must use the relevant Bank Standard Document. Goods under ICB and office equipment under NCB would be packaged for centralized procurement by the Provincial PMO. A specialized procurement agency have been selected to provide assistance. The PPMO would have the responsibility to ensure that the NCB for works, goods, and services which is subject to Bank's prior review would be carried out in accordance to Bank's procurement guidelines. The implementation agencies of the participating prefectures and districts, with guidance from the PPMO would manage their own procurement for works, goods, and training not covered by the PPMO. The procurement profile is shown in Annex 6, Table A.

A. Procurement of Works

Works valued US$134.6 million would be required under the project to support water resources infrastructure works, water conveyance systems, land reclamation, land improvement, on-farm works, roads and buildings. It would cover the cost of earthworks, mechanical equipment and its installation, materials and machinery for the construction of the weir, hydropower station and structures and canal systems to supply water for irrigation, industrial and domestic use. Building construction contracts would cover the supply of construction materials and the construction work at each project site. Apart from the tender for the weir and headreach of the Manshuiwan subcomponent (worth US$25.8 million), all other works would be spread over 15 counties in two prefectures, carried out over five years, and would be too dispersed and too small (individual contract amounts of less than US$10 million) to attract foreign contractors.

Approximately 19 percent of the works (US$25.8 million) would be procured on the basis of International Competitive Bidding (ICB), while about 49 percent (US$66.4 million) with contracts costing in excess of US$200,000 would be procured under NCB procedures acceptable to the Bank. The remaining civil works about 32 percent (US$42.4 million) with contracts costing less than US$200,000 would be divided in two groups. The *first group* comprises small scale and labor intensive works, including land reclamation, land development, on-farm works and access roads under the agriculture crop component, widely scattered over numerous local communities throughout the project area, of which each package would cost less than US$200,000 equivalent. They would not be of interest to contractors. With the prior agreement of the Bank, these works, about US$27.7 million worth in individual assignments not exceeding US$200,000, would be carried out under force account and beneficiary participation arrangements to best utilize the local know-how, available materials and available labor intensive technologies. The implementation of these minor works would be managed by the water conservancy county offices and the technical bureaus with guidance from the County PMO. Payments for these works under force account and beneficiary participation arrangements would based on outputs, applying unit prices and quantities agreed annually with the Bank.

The *second group* of small civil works, which are valued at US$14.7 million and include houses in orchards and for cocoon rearing households, livestock pens and other small structures, would be procured under lump-sum, fixed price contracts awarded on the basis of quotations obtained from three qualified domestic contractors. Each contract would be less than US$200,000 equivalent. The invitation would include a detailed description of the works, including basic specifications, the required completion date, a basic form of agreement acceptable to the Bank, and relevant drawings, where applicable. The award would be made to the contractor who offers the lowest price quotation for the required work and who has the experience and resources to complete the contract successfully. All civil works contracts would include the supply of construction materials.

B. Procurement of Goods

The project would require goods valued at US$61.4 million. To the extent practicable, contracts for goods would be grouped into packages estimated to cost US$200,000 equivalent or more. These goods packages, which are valued at US$15.8 million, would be procured under ICB procedures. They include vehicles (US$2.0 million), fertilizer and chemicals (US$3.5 million), power generating (US$6.6 million) and sericulture and agro-processing (US$3.9 million) equipment. A margin of preference equal to 15 percent of the CIF price of imported goods or the actual customs duties and taxes, whichever is less, will be allowed to qualified domestic bidders.

Other equipment and materials worth US$13.7 million, including livestock, farm and orchard machinery, miscellaneous irrigation support and household cocoon production equipment, in packages valued at less than US$200,000 would be procured through NCB procedures acceptable to the Bank.

Minor laboratory and office equipment, valued at US$1.3 million, would be procured through Limited International Bidding (LIB). The remaining goods, in packages valued at less than US$50,000, mostly small equipment under the agriculture, livestock, sericulture and agro-processing components worth US$4.0 million, and materials valued at US$12.2 million [breeding stock (US$9.1 million), seeds (US$1.0 million), fruit seedlings (US$1.5 million), and small quantity of fertilizer and chemical (0.6 million)] would be procured using national shopping procedures, requiring at least three price quotations. The breeding stock, seeds and fruit seedlings under the project would be procured by individual households from local markets and suppliers. Procurement of the initial stock of production materials by the 38 drying centers, 4 reeling mills and 4 agro-processing plants, valued $10.9 million would be by direct purchase according to the company production contracts with cocoon households, which will be specified in the business development plans.

C. Procurement of Services

Research, training and technical assistance valued US$5.7 million would be undertaken under the project. Applied research ($1.9 million) divided into 45 small contracts, none of them exceeding US$100,000 would be contracted to provincial, prefecture and local institutes to undertake crop, fruit and livestock applied research, field demonstration and data collection. The employment of international and local consultants (US$900,000) would be in accordance with the Bank's "Guidelines for Selection and Employment of Consultants by World Bank Borrowers - January 1997, revised 1997". All consulting assignments over US$200,000 would be advertised in the Development Business. For small contracts less than US$100,000 "selection based on consultant's qualifications" procedures would be used. "Single source selection" procedures may

be used after prior approval from the Bank. Overseas training (US$0.4 million) and domestic training (US$2.5 million) would be reimbursed based on programs agreed with the Bank.

D. Other Items not Financed by the Bank Group

Land acquisition and compensation for lost crops (US$5.0 million), resettlement cost (US$2.9 million), recurrent costs (US$8.2 million), tax, duties and interest during construction (US$2.8 million), vehicle (US$0.3 million), manure (US$3.2 million), design and construction supervision (US$10.1 million) and labor (US$4.3 million), totaling US$40.7 million would be funded by governments and beneficiaries. The design, construction and supervision firms would be selected from a short-listed of qualified firms with terms of references and qualification appropriate for design, construction and supervision.

Prior Review

All ICB contracts for works and goods and NCB contracts for works and goods in excess of US$200,000 would be subject to prior review and approval. Model bidding documents prepared and issued by the Ministry of Finance for Bank financed projects in China would be used for ICB and NCB procurements. For the NCB procurement under the Water Resources component, bid documents for the first three civil works and the evaluation and award recommendations for all bids with contract exceeding US$3.0 million equivalent would be subject to prior review. This would cover six of ten NCB contracts or about 90% of the NCB contract value of US$51.5 million. In other components, the NCB prior review would cover approximately 50 contracts, representing 60 percent of goods and works by value. All contracts for consultant services in excess of US$100,000 for firms and in excess of US$50,000 for individuals would be subject to prior review. That would cover approximately 15 contracts, representing 76 percent of services by value. All other contracts would be subject to ex-post review by Bank supervision missions.

Disbursement

Disbursement for equipment, machinery, vehicles, training and technical assistance would be at 100 percent of foreign expenditures for direct imports, 100 percent of the local, ex-factory costs for locally manufactured items, and 75 percent of expenditures for other items procured locally. Disbursement against civil works and buildings would be 50 percent of expenditures. Disbursement for materials would be 100 percent of foreign expenditures for direct imports, 100 percent of the local, ex-factory costs for locally manufactured items, and 50 percent of expenditures for other items procured locally.

Disbursements would be made against **Statement of Expenditures (SOEs)** in the case of overseas training, study tours, domestic training and contracts for goods and works costing less than US$200,000 and consultant contracts costing less that $100,000 for firms and $50,000 for individual. Disbursement for works carried out under force account and beneficiary participation arrangements would be made against statements of physical progress achieved at each site at unit prices agreed with the Bank Group at the start of the project and subject to annual review. Sichuan shall ensure that the initial stock of production materials under sericulture and agro-processing subprojects will not be financed under the sub-loans until the operation plans for the sub-projects are acceptable to the Bank Group and equipment are installed and ready for operation.

To facilitate disbursement, a **Special Account** (SA in US dollar with the authorized maximum allocation of US$8 million) would be opened at a commercial bank acceptable to Bank Group,

with an initial deposit of US$4.5 million. The deposit will be increased to US$8 million (equivalent to the Bank's expenditure for four months of project implementation period) when project disbursement equals or exceeds the equivalent of SDR 20 million. Applications for replenishment for the SA would be submitted monthly or whether the account is drawn down to 50 percent of its initial deposit, whichever comes first. To increase efficiency, the Provincial Bureau of Finance will make payments within 2 weeks after receipt and review of withdrawal applications. The lower level BOF will pass on the funds promptly, no later than 2 weeks after the funds were received.

To avoid delays in the start-up of the project, **Retroactive Financing** of US$8 million equivalent is recommended to cover expenditures incurred between April 15, 1998 and the date of signing of the Loan/Credit Agreement. The activities covered are detailed in PIP.

The project is expected to be completed by December 31, 2003 and the Loan/Credit is expected to close on December 31, 2004. Disbursement experience in China has been favorable and better than Bank-Group-wide and East Asia Regional average. The project disbursement profile is essentially in line with that for previous agricultural development and institutional building projects in China. The estimated **disbursement schedule** is given in Annex 6, Table C.

Annex 6, Table A: Project Costs by Procurement Arrangements [3]

(in US$ million equivalent)

Expenditure Category	Procurement Method				Total Cost (including contingencies)
	ICB	NCB	Other	N.B.F	
1. Works					
-Civil Works	25.8	53.2	36.4		115.4
	(12.9)	(26.6)	(18.2)		(57.7)
-Buildings		13.2	6.0		19.2
		(7.3)	(3.3)		(10.6)
2. Goods					
-Equipment and vehicles	12.3	5.8	5.6		23.7
	(12.3)	(5.8)	(5.3)		(23.4)
-Materials	3.5	7.9	23.1	3.2	37.7
	(3.5)	(5.9)	(13.5)	(0.0)	(22.9)
3. Services					
-Research & Overseas Training and T.A			3.2		3.2
			(3.2)		(3.2)
-Domestic Training			2.5		2.5
			(1.3)		(1.3)
-Design and Supervision					10.1
				10.1	
				(0.0)	(0.0)
4. Miscellaneous					
-Land and Labor				9.4	9.4
				(0.0)	(0.0)
-Recurrent Costs				8.2	8.2
				(0.0)	(0.0)
-Taxes and Interest D.Const.				2.8	2.8
				(0.0)	(0.0)
-Resettlement Costs				2.9	2.9
				(0.0)	(0.0)
-Others				3.8	3.8
				(0.0)	(0.0)
5. Front-end Fee			0.9		0.9
			(0.9)		(0.9)
Total	41.6	80.1	77.7	40.4	239.8
	(28.7)	(45.6)	(45.7)	(0.0)	(120.0)

Note: N.B.F. = Not Bank-financed (includes land acquisition and crop compensation, manure, unskilled labor, recurrent costs, taxes and duties, interest during construction, resettlement and design supervision costs, which would be financed by local government and beneficiaries. The selection of the firms for construction supervision would be from a short list of qualified firms). Other procurement methods include (a) force account for works, (b) direct contracts for research and domestic training and initial stocks of production materials, (c) Limited International Bidding for laboratory and specialized office equipment (d) national shopping for breeding stock, seedlings, seeds, small equipment and local produced inputs and materials and (e) front-end fee of US$0.9 million.

Figures in parenthesis are the amounts to be financed by the Bank loan/IDA credit

[3] For details on presentation of Procurement Methods refer to OD11.02, "Procurement Arrangements for Investment Operations." Details on Consultant Services can be shown more easily in the Table A1 format (additional to Table A, where applicable).

Annex 6, Table A1: Consultant Selection Arrangements

(in US$'000 equivalent)

Consultant Services Expenditure Category	Selection Method							Total Cost (including contingencies)
	QCBS	QBS	SFB	LCS	CQ	Other	N.B.F.	
A. Firms	/	/	a/ 1,900 (1,900)			c/ 2,500 (1,250)	e/ 10,100 (0.0)	14,500 (3,150)
B. Individuals					b/ 900 (900)	d/ 400 (400)		1,300 (1,300)
Total			1,900 (1,900)		900 (900)	2,900 (1,650)	10,100 (0)	15,800 (4,450)

Note: QCBS = Quality and Cost-Based Selection
QBS = Quality-Based Selection
SFB = Selection under a Fixed Budget
LCS = Least-Cost Selection
CQ = Selection Based on Consultants' Qualifications
Other = Selection of individual consultants (per Section V of Consultants Guidelines), Commercial Practices, etc.
N.B.F. = Not Bank-Financed

Figures in parenthesis are the amounts to be financed by the Bank loan.

a/ Applied research contracts valued at US$1.9 million.
b/ Consultant services valued at $0.9 million.
c/ Domestic training total valued of $2.5 million.
d/ Overseas training valued at $4 million.
e/ Design, construction and supervision valued at US$10.1 million. Firms would be selected from a short-listed of qualified firms with terms of references and qualification appropriate for desigh, construction and supervision.

Annex 6, Table B: Thresholds for Procurement Methods and Prior Review

Expenditure Category	Value all Contracts ($ million)	Procurement Method /a	Value all Contracts ($ million)	Estimated Total Value Subject to Prior Review /c
				US $ millions
1. Works				
	>10,000	ICB	25.8	20.5
	<200/d	NCB	66.4	27.2
	<50	SP/FA	42.4	
Total Works			134.6	47.7
2. Goods				
	= or >200	ICB	15.8	15.8
	<200	NCB	13.7	8.2
	<50	SP	28.7	
Total Goods			58.2	24.0
3. Services				
Training	<100	Other	2.9	2.4
Consultant	<100	CQ	0.9	0.4
Research	<50	SFB	1.9	0.9
Design, construction &supervision	>100	NBF	10.1	
Total Services			15.8	3.7
4. Miscellaneous		NBF	30.3	
5. Front-end Fee			0.9	
Total Value			239.8	
Total value of contracts subject to prior review:				75.4

/a ICB = International Competitive Bidding, NCB = National Competitive Bidding, SP = Shopping, FA = Force Account and Beneficiary Participation, TA denotes procurement method specified in Bank Group's Guidelines for the use of consultants and NBF denotes non-Bank financing.

/b Thresholds for procurement methods.

/c Thresholds for Bank's prior review are: (a) All ICB contracts for works and goods and NCB contracts for works and goods in excess of US$200,000. (b) For NCB procurement under the Water Resources Component, bid documents for the first three civil works and the evaluation and award recommendations for all bids with contract exceeding US$3 million and (c) all contracts for consultant services in excess of US$100,000 for firms and $50,000 for individuals.

/d Competition would be assured through local advertising; at least three bidders would be required; on similar projects in China typically more than three bidders participate.

Annex 6, Table C: Allocation of Loan/Credit Proceeds

	Category	Amount of the Credit Allocated (Expressed in SDR Equivalent)	Amount of the Loan Allocated (Expressed in Dollars)	% of Expenditures to be Financed
1.	Civil works	14,280,000	41,470,000	50%
2.	Equipment and Vehicles	2,280,000	17,860,000	100% of foreign expenditures, 100% of local expenditures (ex-factory cost) and 75% of local expenditures for other items procured locally
3.	Materials	3,700,000	15,410,000	100% of foreign expenditures, 100% of local expenditures (ex-factory cost) and 50% of local expenditures for other items procured locally
4.	Research, overseas training, study tour and consulting services	710,000	1,880,000	100%
5.	Domestic training	430,000	570,000	50%
6.	Fee		900,000	Amount due under Section 2.04 of the Loan Agreement
7.	Unallocated		11,910,000	
	TOTAL:	21,400,000	90,000,000	

Annex 6, Table D: Estimated Disbursement Schedule

IDA Fiscal Year/ Semester	Disbursement Semester ($ Million)	Disbursement Cumulative ($ Million)	Disbursement Cumulative (%)	Disbursement Profile Year/ Semester	Disbursement Profile Cumulative (%)
1999				Year 1	
Second (Jan-Jun. 1999)	10.8 a/	10.8	9	Second	0
2000				Year 2	
First (Jul-Dec 1999)	6.0	16.8	14	First	30
Second (Jan-Jun. 2000)	9.6	26.4	22	Second	38
2001				Year 3	
First (Jul-Dec 2000)	12.0	38.4	32	First	46
Second (Jan-Jun. 2001)	12.0	50.4	42	Second	54
2002				Year 4	
First (Jul-Dec 2001)	12.0	62.4	52	First	66
Second (Jan-Jun. 2002)	12.0	74.4	62	Second	74
2003				Year 5	
First (Jul-Dec 2002)	12.0	86.4	72	First	82
Second (Jan-Jun. 2003)	12.0	98.4	82	Second	90
2004				Year 6	
First (Jul-Dec 2003)	9.6	108.0	90	First	94
Second (Jan-Jun. 2004)	6.0	114.0	95	Second	98
2005				Year 6	
First (Jul-Dec 2004)	6.0	120.0	100	First	100

a/ Including retroactive financing of US$8 million for cover expenditure incurred between April 15, 1998 and not more than one year before signing of the loan/credit agreement and US$0.9 million to cover front-end fee.

Completion Date: December 31, 2003
Closing Date: December 31, 2004

Annex 7
Anning Valley Agricultural Development Project
Project Processing Budget and Schedule

A. Project Budget (US$000)	Planned	Actual
(Total includes Grant funding of $280,000)	(At final PCD stage)	
LENP	363.0	488.0
LENA	250.5	92.0
LENN	46.5	27.0
SPN	360.0	

B. Project Schedule	Planned (At final PCD stage)	Actual
Time taken to prepare the project (months)		
First Bank mission (identification)	03/13/97	03/18/97
Appraisal mission departure	03/23/98	06/17/98
Negotiations	09/14/98	11/02/98
Planned Date of Effectiveness	12/14/98	

Prepared by: Sichuan Provincial Government

Preparation assistance: FAO/CP Investment Center, PHRD Trust Fund and Australian Trust Fund

Task team members who worked on the project included:

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Arlene Reyes	Team Assistant
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Peer Reviewers for this project

Willem van Tuijl	Irrigation Development
Guy Alaerts	Water Resource Development
Cees de Haan	Livestock
Michel Debatisse	Agro-Processing
Mary Judd	Social Development
Robert Crooks	Environment

Annex 8
Anning Valley Agricultural Development Project
Documents in the Project File

A. Project Implementation Plan

1. Project Implementation Plan for Anning Valley Agricultural Development Project.
   Sichuan Provincial Project Management Office for Anning Valley Agricultural Development Project.
   October, 1997

2. Comprehensive Project for Development of Agricultural Resources in the Anning Valley: Social Assessment.
   Ayi Bamo and Stevan Harrell (Consultants). February 19, 1998.

3. Anning Valley Agricultural Development Project Social Assessment (Part 2).
   Ayi Bamo, Consultant. July 13, 1998.

4. Minority Nationality Development Plan for the Anning Agricultural Development Project
   Task Force for Minority Nationality Development.
   June 26, 1998.

B. Studies

1. Project Preparation Report on Agro-processing and Post Harvest Facilities for Anning Valley Agricultural Development Project.
   David E. Gue, Consultant. November, 1997.

2. Project Preparation Report on Crop Development for Anning Valley Agricultural Development Project.
   Ian Hancock, Consultant. November, 1997.

3. Project Preparation Report on Livestock Development Component for Anning Valley Agricultural Development Project.
   Kerry McIntyre, Consultant. October, 1997.

4. Project Preparation Report on Sericulture and Raw Silk Production for Anning Valley Agricultural Development Project.
   Ashley C. Morton, Consultant. July 1997.

C. Working Papers

1. Detailed Project Costs.
2. Farm Models.
3. Financial and Economic Analysis

D. Other

1. Resettlement Action Plan for Manshuiwan Water Resource Scheme under Daqiao Dam. Resettlement Study Group of PMO Daqiao Hydropower Development Corporation General for Anning Valley Agricultural Development Project. November, 1997.

2. Resettlement Action Plan for Huangqiao Reservoir, Miyi County. Resettlement Study Group of Panzhihua Project Management Office. November, 1997.

3. Summary of Resettlement Action Plans for Manshuiwan Water Resource Scheme and Huangqiao Reservoir.

E. Water Resources Component

1. Feasibility Study Report on Manshuiwan Left Arterial Canal work of Daqiao Irrigated Area in Liangshan Prefecture of Sichuan Province; Sichuan Provincial Water Conservancy and Hydroelectric Exploration Design and Research Institute, August 1996.

2. Feasibility Report on the First Stage Project Reservoir and Site of the Project; Section Six, Settlement of submergence by the Reservoir and the Site of the Project; Daqiao Hydroelectric Development Corporation, Liangshan Prefecture, Sichuan Province, August 1996.

3. Feasibility Study Report on Manshuiwan Canal Head of Daqiao Reservoir Irrigated Area in Liangshan Prefecture of Sichuan Province Investment Budget Estimate; Sichuan Provincial Water Conservancy and Hydroelectric Exploration Design and Research Institute, September 1996.

4. Feasibility Study Report, Irrigation Component; Feasibility Study Group, Sichuan Anning Valley Agricultural Development Project, May 1997.

5. Feasibility Study Report, Canal of Daqiao, Feasibility Study Group, Sichuan Anning Valley Agricultural Development Project, May 1997.

6. Feasibility Study Report on Manshuiwan Canal Head of Daqiao Reservoir Irrigated Area in Liangshan Prefecture of Sichuan Province; Investment Budget Estimate Statement. Feasibility Study Group, Sichuan Anning Valley Agricultural Development Project, August 1997.

7. Feasibility Study of Daqiao Reservoir Canal System Work; World Bank Office of Daqiao Hydroelectric Development Corp. Sichuan Province, March 1998.

8. Feasibility Study Report, Shengli Reservoir Complete Set Sub-Project, Anning Valley Agriculture Development Project, Panzhihua Task Division, April 1997.

9. Feasibility Report, Huangqiao Reservoir Project, September 1997.

Annex 9
Statement of World Bank Loans and Credits
As of 07-Dec-98

Project ID	Fiscal Year	Borrower	Purpose	Original Amount in US$ Millions			
				IBRD	IDA	Cancellations	Undisbursed
Number of Closed Projects: 97							
Active Projects							
CN-PE-3539	1998	PRC	SUST COAST RES DEV	100.00	0.00	0.00	100.00
CN-PE-3566	1998		BASIC HLTH SERVICES	0.00	85.00	0.00	87.19
CN-PE-35698	1998	PRC	HUNAN POWER DEVELOP.	300.00	0.00	0.00	300.00
CN-PE-3591	1998	PRC	STATE FARMS COMMERCI	150.00	0.00	0.00	118.43
CN-PE-3606	1998	GOC	ENERGY CONSERVATION	63.00	0.00	0.00	63.00
CN-PE-3614	1998	PEOPLE'S REPUBLIC OF CHIN	GUANGZ. CITY CRT.TRP	200.00	0.00	0.00	200.00
CN-PE-3619	1998	MINISTRY OF FINANCE	2ND INLAND WATERWAYS	123.00	0.00	0.00	123.00
CN-PE-36414	1998	CHINA	GUANGXI URBAN ENV.	72.00	20.00	0.00	92.65
CN-PE-36949	1998	PEOPLES REPUBLIC OF CHINA	NAT.HWY 3-HUBEI	250.00	0.00	0.00	242.00
CN-PE-40185	1998	PRC	SHANDONG ENVIRONMENT	95.00	0.00	0.00	95.00
CN-PE-45788	1998	PEOPLE'S REPUBLIC OF CHIN	TRI-PROVINCIAL HWY	230.00	0.00	0.00	230.00
CN-PE-46563	1998	PRC	TARIM BASIN II	90.00	60.00	0.00	151.82
CN-PE-46952	1998	PRC	FOREST. DEV. POOR AR	100.00	100.00	0.00	203.00
CN-PE-49700	1998	PRC	IAIL-2	300.00	0.00	0.00	300.00
CN-PE-51736	1998	GOC	E. CHINA/JIANGSU PWR	250.00	0.00	0.00	250.00
CN-PE-56491	1998	PRC	HEBEI EARTHQUAKE	0.00	28.40	0.00	26.33
CN-PE-34081	1997	PRC	XIAOLANGDI MULTI. II	430.00	0.00	0.00	381.93
CN-PE-3590	1997	PRC	QINBA MTS. POVTY RED	30.00	150.00	0.00	163.08
CN-PE-3635	1997	PRC	VOC. ED. REFORM PROJ	10.00	20.00	0.00	20.40
CN-PE-3637	1997	PRC	NATL RUR WATER III	0.00	70.00	0.00	66.17
CN-PE-36405	1997	PRC	WANJIAZHAI WATER TRA	400.00	0.00	0.00	336.71
CN-PE-3643	1997	PRC	XINJIANG HIGHWAYS II	300.00	0.00	0.00	237.28
CN-PE-3650	1997	GOC	TUOKETUO POWER/INNER	400.00	0.00	0.00	400.00
CN-PE-3654	1997	PRC	HUNAN/GUANG HWY2-NH2	400.00	0.00	0.00	357.97
CN-PE-36952	1997	PRC	BASIC ED. IV	0.00	85.00	0.00	56.12
CN-PE-38988	1997	PRC	HEILONGJIANG ADP	120.00	0.00	0.00	97.02
CN-PE-44485	1997		SHANGHAI WAIGAOQIAO	400.00	0.00	0.00	400.00
CN-PE-34618	1996	PRC	LABOR MARKET DEV.	10.00	20.00	0.00	24.32
CN-PE-3507	1996	GOC	ERTAN HYDRO II	400.00	0.00	0.00	35.74
CN-PE-3563	1996	PRC	ANIMAL FEED	150.00	0.00	0.00	144.00
CN-PE-3569	1996	P.R.C.	SHANGHAI-ZHEJIANG HI	260.00	0.00	7.75	114.66
CN-PE-3589	1996	PRC	DISEASE PREVENTION	0.00	100.00	0.00	73.21
CN-PE-3594	1996	PRC	GANSU HEXI CORRIDOR	60.00	90.00	0.00	130.27
CN-PE-3599	1996	YUNNAN PROV. GOV.	YUNNAN ENVIRONMENT	125.00	25.00	0.00	141.14
CN-PE-3602	1996	PRC	HUBEI URBAN ENV. PRO	125.00	25.00	0.00	128.19
CN-PE-3638	1996	PRC	SEEDS SECTOR COMMER.	80.00	20.00	0.00	84.93
CN-PE-3646	1996	PRC	CHONGQING IND POL CT	170.00	0.00	0.00	169.68
CN-PE-3648	1996	SHANGHAI MUN. GOVT	SECOND SHANGHAI SEWE	250.00	0.00	0.00	182.13
CN-PE-3649	1996	CHINA	SHANXI POVERTY ALLEV	0.00	100.00	0.00	39.71
CN-PE-3652	1996	PRC	2ND SHAANXI PROV HWY	210.00	0.00	0.00	148.70
CN-PE-36950	1996	PRC	BASIC ED. POOR III	0.00	100.00	0.00	15.89
CN-PE-40513	1996	PRC	2ND HENAN PROV HWY	210.00	0.00	0.00	181.05
CN-PE-3493	1995	PRC	INLAND WATERWAYS	420.00	0.00	0.00	298.09
CN-PE-3571	1995	PRC	RAILWAYS VII	400.00	0.00	0.00	385.18
CN-PE-3585	1995	GOC	SHENYANG IND. REFORM	175.00	0.00	0.00	107.97
CN-PE-3596	1995	PRC	YANGTZE BASIN WATER	100.00	110.00	0.00	48.13
CN-PE-3598	1995		LIAONING ENVIRONMENT	110.00	0.00	0.00	70.21
CN-PE-3600	1995	PRC	TECHNOLOGY DEVELOPME	200.00	0.00	0.00	139.18
CN-PE-3603	1995	PRC	ENT. HOUSING SOC. SE	275.00	75.00	0.00	226.09
CN-PE-36041	1995	MOF	FISCAL & TAX REF. &	50.00	25.00	0.00	67.35
CN-PE-3612	1995	PRC	XINJIANG HIGHWAY I	150.00	0.00	0.00	63.09
CN-PE-3634	1995	PRC	MATERNAL CHILD HEALT	0.00	90.00	0.00	22.85
CN-PE-3636	1995	PRC	BASIC EDUC IN POOR &	0.00	100.00	0.00	3.91
CN-PE-3639	1995	PRC	SOUTHWEST POV. REDUC	95.00	200.00	0.00	155.39
CN-PE-3642	1995		ZHEJIANG POWER DEVT	400.00	0.00	0.00	158.09
CN-PE-3647	1995	PRC	ECONOMIC LAW REFORM	0.00	10.00	0.00	5.77
CN-PE-36947	1995	GOC	SICHUAN TRANSMISSION	270.00	0.00	0.00	142.95
CN-PE-37156	1995	PRC	IODINE DEF. DISORDER	7.00	20.00	7.00	2.33
CN-PE-3502	1994	MOH	RUR HEALTH MANPOWER	0.00	110.00	0.00	34.57
CN-PE-3504	1994	PRC	HEBEI/HENAN NATIONAL H'WAYS	380.00	0.00	0.00	63.53
CN-PE-3540	1994	PRC	LOESS PLATEAU	0.00	150.00	0.00	34.09
CN-PE-3557	1994	PRC	FOREST RESOURCE DEV	0.00	200.00	0.00	53.02
CN-PE-3562	1994	PRC	XIAOLANGDI MULTIPURPOSE	460.00	0.00	0.00	1.00

Project ID	Fiscal Year	Borrower	Purpose	Original Amount in US$ Millions			
				IBRD	IDA	Cancellations	Undisbursed
CN-PE-3586	1994	PRC	SHANGHAI ENVIRONMENT	160.00	0.00	0.00	74.80
CN-PE-3593	1994	PRC	SONGLIAO PLAIN ADP	0.00	205.00	0.00	32.82
CN-PE-3595	1994	PRC	RED SOILS II DEVELOP	0.00	150.00	0.00	45.15
CN-PE-3609	1994	GOC	SICHUAN GAS DEV & CONSERVATION	255.00	0.00	0.00	133.49
CN-PE-3622	1994	SHANGHAI MUNICIPAL GOVT	SHANGHAI MTP II	150.00	0.00	0.00	10.39
CN-PE-3626	1994	GOC	FUJIAN PROV HIGHWAY	140.00	0.00	0.00	58.63
CN-PE-3633	1994	GOVERNMENT OF PRC	TELECOMMUNICATIONS	250.00	0.00	30.00	19.55
CN-PE-3641	1994	PRC	YANGZHOU THERMAL POWER	350.00	0.00	0.00	77.40
CN-PE-3644	1994	PRC	XIAOLANGDI RESETTLEMENT	0.00	110.00	0.00	31.25
CN-PE-3473	1993	P.R.C.	ZHEJIANG MULTICITIES	0.00	110.00	0.00	35.92
CN-PE-3509	1993	PRC	CHANGCHUN WAT SUPP &	0.00	120.00	27.55	17.23
CN-PE-3512	1993	GOVT OF PEOPLES REP. OF C	SHANGHAI PORT REST.	150.00	0.00	25.74	4.27
CN-PE-3518	1993	PRC	GUANGDONG PROV. TRANSPORT	240.00	0.00	0.00	2.08
CN-PE-3533	1993		TIANJIN IND. II	150.00	0.00	16.00	46.27
CN-PE-3559	1993	PRC	AGRIC. SUPPORT SERVI	0.00	115.00	0.00	10.64
CN-PE-3561	1993	PRC	SICHUAN ADP	0.00	147.00	0.00	8.37
CN-PE-3567	1993	PRC	EFFECTIVE TEACHING S	0.00	100.00	0.00	37.78
CN-PE-3570	1993	PRC	RAILWAY VI	420.00	0.00	0.00	95.95
CN-PE-3580	1993	PRC	SO.JIANGSU ENVIRON. PROTECT.	250.00	0.00	0.00	9.40
CN-PE-3581	1993	PRC	HENAN PROV. TRANSPORT	120.00	0.00	0.00	10.78
CN-PE-3592	1993	PRC	REF. INST'L.& PREINVEST(CRISP)	0.00	50.00	0.00	20.00
CN-PE-3597	1993	PRC	TAIHU BASIN FLOOD CO	100.00	100.00	0.00	47.55
CN-PE-3616	1993	PRC	TIANHUANGPING HYDRO	300.00	0.00	0.00	67.13
CN-PE-3623	1993	PRC	FINANCIAL SECTOR T.A	0.00	60.00	0.00	21.58
CN-PE-3627	1993	PRC	GRAIN DISTRIBUTION P	325.00	165.00	0.00	352.53
CN-PE-3632	1993	ROC	ENVIRONMENT TECH ASS	0.00	50.00	0.00	10.95
CN-PE-3486	1992		RAILWAYS V	330.00	0.00	0.00	22.48
CN-PE-3492	1992	GOC	DAGUANGBA-HAINAN	30.00	37.00	0.00	1.57
CN-PE-3503	1992		ZOUXIAN THERMAL POWE	310.00	0.00	0.00	7.84
CN-PE-3534	1992	PRC	ZHEJIANG PROV TRANSP	220.00	0.00	0.00	23.67
CN-PE-3544	1992	PEOPLE'S REPUBLIC OF CHIN	EDUC DEV IN POOR PRO	0.00	130.00	0.00	3.43
CN-PE-3555	1992	PRC	GUANGDONG AG. DEVT.	0.00	162.00	0.00	.20
CN-PE-3564	1992	BEIJING MUNICIPALITY	BEIJING ENVIRONMENT	45.00	80.00	0.00	25.75
CN-PE-3565	1992		SHANGHAI METRO TRANS	0.00	60.00	0.00	3.85
CN-PE-3568	1992	R.O.C.	TIANJIN URB DEV & EN	0.00	100.00	0.00	21.78
CN-PE-3587	1992	PRC	RURAL WAT SUPP & SAN	0.00	110.00	0.00	.27
CN-PE-3624	1992	MIN. OF PUBL.HEALTH	INFECTIOUS DISEASES	0.00	129.60	0.00	34.69
CN-PE-3478	1991	PRC	KEY STUDIES DEVELOPM	0.00	131.20	0.00	.76
CN-PE-3560	1991	PRC	HENAN AGRIC. DEVT.	0.00	110.00	0.00	1.80
CN-PE-3582	1991	PRC	IRRIG. AGRIC. INTENS	147.10	187.90	0.00	2.37
Total				14,797.10	4,908.10	114.04	10,227.88

	Active Projects	Closed Projects	Total
Total Disbursed (IBRD and IDA):	9,389.84	11,047.95	20,437.79
of which has been repaid:	80.07	2,348.78	2,428.85
Total now held by IBRD and IDA:	19,511.04	8,349.40	27,860.44
Amount sold :	0.00	0.00	0.00
Of which repaid :	0.00	0.00	0.00
Total Undisbursed :	10,227.88	.74	10,228.62

Note:
Disbursement data is updated at the end of the first week of the month and is currently as of 30-Nov-98.

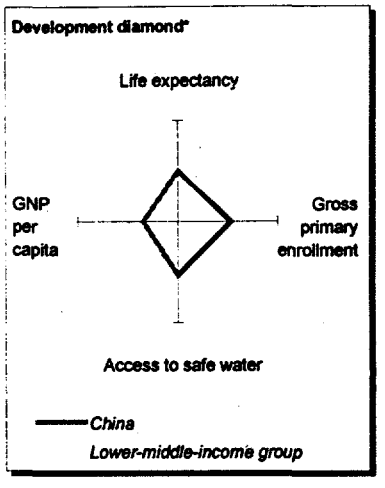
Statement of IFC's Committed and Disbursed Portfolio as 31-Oct-1998
(In US$ Millions)

		Committed				Disbursed			
		IFC				IFC			
FY Approval	Company	Loan	Equity	Quasi	Partic	Loan	Equity	Quasi	Partic
0	Pacific Ports	0.00	3.64	0.00	0.00	0.00	3.64	0.00	0.00
1987/92/94	China Bicycles	8.50	3.39	0.00	0.00	8.50	3.39	0.00	0.00
1993	Shenzhen PCCP	3.76	.99	0.00	0.00	3.76	.99	0.00	0.00
1993	Yantai Cement	14.56	1.95	0.00	7.77	14.56	1.95	0.00	7.77
1994	China Walden JV	0.00	6.00	0.00	0.00	0.00	3.53	0.00	0.00
1994	China Walden Mgt	0.00	.01	0.00	0.00	0.00	.01	0.00	0.00
1994	Dalian Glass	20.50	2.40	0.00	40.50	20.50	2.40	0.00	40.50
1994	Dynamic Fund	0.00	12.35	0.00	0.00	0.00	10.08	0.00	0.00
1994/97	PTP Leshan	12.20	1.00	0.00	16.00	12.20	1.00	0.00	16.00
1995	Dupont Suzhou	24.92	4.15	0.00	52.00	24.92	4.15	0.00	52.00
1995	Newbridge Inv.	0.00	9.40	0.00	0.00	0.00	6.10	0.00	0.00
1995	Suzhou PVC	22.00	2.48	0.00	22.20	15.00	2.48	0.00	15.14
1996	Beijing Hormel	5.00	.50	0.00	5.50	5.00	.50	0.00	5.50
1996	Jingyang	40.00	0.00	0.00	100.00	40.00	0.00	0.00	100.00
1996	Nanjing Kumho	16.00	3.81	0.00	45.50	13.63	3.81	0.00	38.75
1996	Tianjin Kumho	11.17	0.00	0.00	33.00	0.00	0.00	0.00	0.00
1996	Weihai Weidongri	4.22	0.00	0.00	0.00	4.22	0.00	0.00	0.00
1997	Ningbo	0.00	2.00	0.00	0.00	0.00	2.00	0.00	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	8.31	0.00	0.00	16.69
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	4.45	0.00	0.00	9.55
1998	Rabobank SHFC	2.75	0.00	0.00	2.75	2.25	0.00	0.00	2.25
1998	Zhen Jing	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Portfolio:		234.94	56.07	0.00	414.67	190.63	46.03	0.00	320.82

		Approvals Pending Commitment			
		Loan	Equity	Quasi	Partic
1998	CHENGDU CHEMICAL	7.40	3.20	0.00	8.60
1998	CHENGXIN-IBCA	0.00	.36	0.00	0.00
1997	CHINEFARGE	12.80	0.00	0.00	20.00
1998	EURECA	0.00	3.00	0.00	0.00
1998	JIANGSU COLINE	6.50	0.00	0.00	0.00
1997	NISSAN/DONGFENG	20.20	0.00	0.00	27.00
1998	ORIENT FIN A INC	3.33	0.00	0.00	0.00
1997	PTP HOLDINGS	0.00	1.50	0.00	0.00
1998	SCANA LESHAN	6.10	1.35	0.00	0.00
1998	SHANGHAI KRUPP	30.00	0.00	0.00	78.44
1997	SMC	14.00	0.00	0.00	14.00
1996	TIANJIN	9.10	0.00	0.00	9.10
1998	WUHAN CIG	0.00	1.50	0.00	0.00
1998	WUHAN PORT	5.00	0.00	0.00	5.00
1998	XIB	50.00	20.00	0.00	0.00
1998	ZHEJIANG COLINE	6.50	0.00	0.00	0.00
1998	ZHEN JING	4.50	0.00	0.00	0.00
Total Pending Commitment:		175.43	30.91	0.00	162.14

Annex 10
China at a Glance

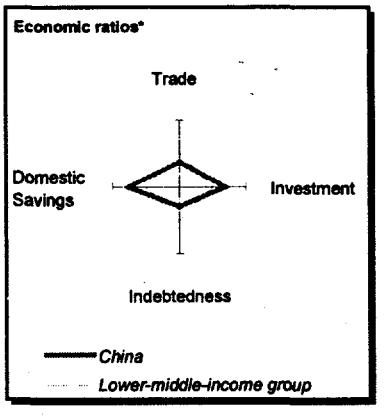
POVERTY and SOCIAL	China	East Asia & Pacific	Lower-middle-income
1997			
Population, mid-year *(millions)*	1,227.2	1,753	2,285
GNP per capita *(Atlas method, US$)*	860	970	1,230
GNP *(Atlas method, US$ billions)*	1,055.4	1,707	2,818
Average annual growth, 1991-97			
Population *(%)*	1.1	1.3	1.2
Labor 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	69	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)*	118	115	111
Male	119	118	116
Female	117	116	113



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

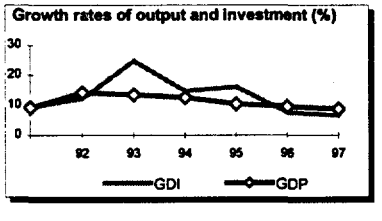
	1976	1986	1996	1997
GDP *(US$ billions)*	148.8	295.7	825.0	935.0
Gross domestic investment/GDP	28.4	37.7	39.2	38.2
Exports of goods and services/GDP	5.1	12.2	19.3	22.3
Gross domestic savings/GDP	29.0	35.2	41.3	42.2
Gross national savings/GDP	29.0	35.3	40.0	42.2
Current account balance/GDP	0.2	-2.5	1.1	4.3
Interest payments/GDP	0.0	0.2	0.6	0.6
Total debt/GDP	0.0	8.0	15.6	14.8
Total debt service/exports	0.0	9.6	8.8	9.2
Present value of debt/GDP	..	..	14.1	..
Present value of debt/exports	..	..	65.1	..

	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	8.5	8.6	7.2	..
Exports of goods and services	18.8	14.0	8.3	..	..

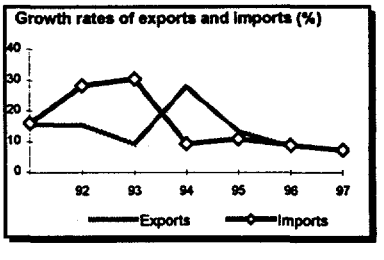


STRUCTURE of the ECONOMY

	1976	1986	1996	1997
(% of GDP)				
Agriculture	33.2	27.1	20.2	19.7
Industry	42.3	44.0	49.0	50.8
Manufacturing	30.1	35.5	38.1	39.5
Services	24.5	28.9	30.8	29.5
Private consumption	63.3	51.4	47.6	47.2
General government consumption	7.7	13.4	11.1	10.5
Imports of goods and services	4.5	14.7	17.1	18.2



	1976-86	1987-97	1996	1997
(average annual growth)				
Agriculture	6.0	4.4	5.1	3.9
Industry	11.0	13.9	12.1	10.5
Manufacturing	12.8	13.3	11.7	10.5
Services	12.0	8.7	7.9	9.4
Private consumption	9.3	8.8	11.9	..
General government consumption	9.4	9.6	8.3	..
Gross domestic investment	10.8	11.3	7.6	6.6
Imports of goods and services	22.5	12.8	8.8	7.2
Gross national product	9.8	9.9	9.7	8.2

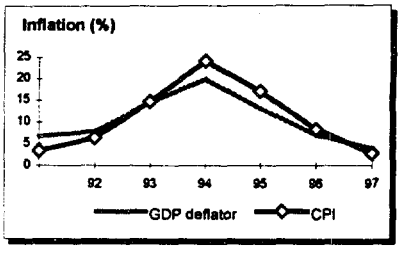


Note: 1997 data are preliminary estimates.

* 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.

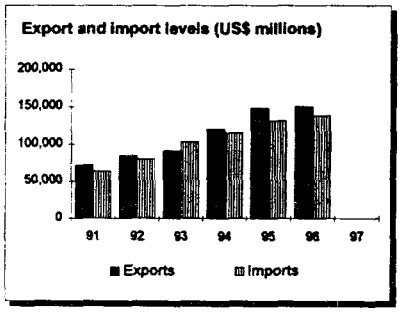
PRICES and GOVERNMENT FINANCE

	1976	1986	1996	1997
Domestic prices				
(% change)				
Consumer prices	..	6.6	8.3	2.8
Implicit GDP deflator	2.6	4.6	7.0	3.9
Government finance				
(% of GDP, includes current grants)				
Current revenue	..	24.0	11.3	11.6
Current budget balance	..	5.6	0.6	0.6
Overall surplus/deficit	..	-1.8	-1.5	-1.5



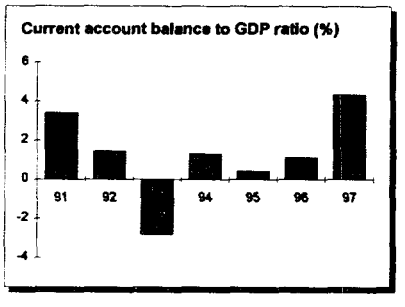
TRADE

	1976	1986	1996	1997
(US$ millions)				
Total exports (fob)	..	30,942	151,073	..
Food	..	4,448	10,232	..
Fuel	..	3,683	5,929	..
Manufactures	..	19,670	129,141	..
Total imports (cif)	..	42,904	138,828	..
Food	..	2,002	..	..
Fuel and energy	..	504	6,877	..
Capital goods	..	20,415	..	..
Export price index *(1995=100)*	..	66	..	..
Import price index *(1995=100)*	..	69	..	..
Terms of trade *(1995=100)*	..	96	..	..



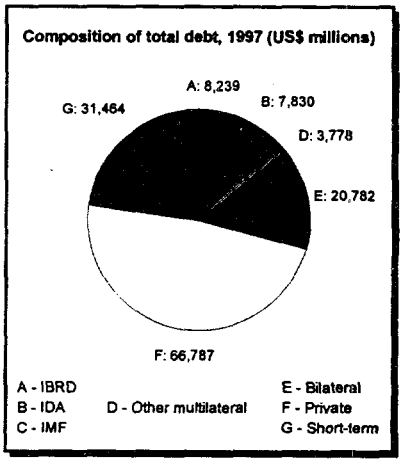
BALANCE of PAYMENTS

	1976	1986	1996	1997
(US$ millions)				
Exports of goods and services	7,383	29,583	171,700	207,800
Imports of goods and services	7,125	37,472	154,100	167,200
Resource balance	258	-7,889	17,600	40,600
Net income	0	176	-12,500	-10,200
Net current transfers	0	255	4,200	10,200
Current account balance	258	-7,458	9,300	40,600
Financing items (net)	..	5,410	22,340	-4,900
Changes in net reserves	..	2,048	-31,640	-35,700
Memo:				
Reserves including gold *(US$ millions)*	..	..	..	..
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	138,006
IBRD	..	965	7,616	8,239
IDA	..	774	7,579	7,830
Total debt service	..	2,973	15,756	19,933
IBRD	..	66	840	858
IDA	..	8	73	81
Composition of net resource flows				
Official grants	..	155	248	255
Official creditors	..	1,165	4,359	2,315
Private creditors	..	3,693	6,454	3,835
Foreign direct investment	..	1,875	40,180	37,000
Portfolio equity	..	0	3,466	0
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



MAP SECTION

CHINA
ANNING VALLEY
AGRICULTURAL DEVELOPMENT PROJECT

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GRAIN:
- GRAIN PRODUCTION
- SEED PRODUCTION

VEGETABLES:
- VEGETABLE PRODUCTION
- VEGETABLE SEED

FRUIT:
- POMEGRANATE
- LONGAN
- MANGO

WATER:
- IRRIGATION

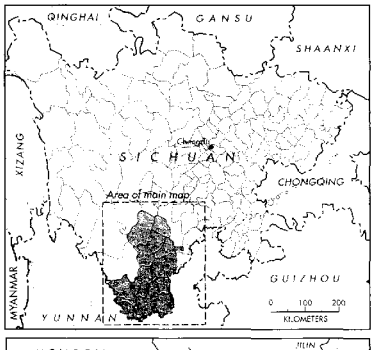
SERICULTURE:
- COCOON (HOUSEHOLD)
- DRYING CENTER
- REELING MILL

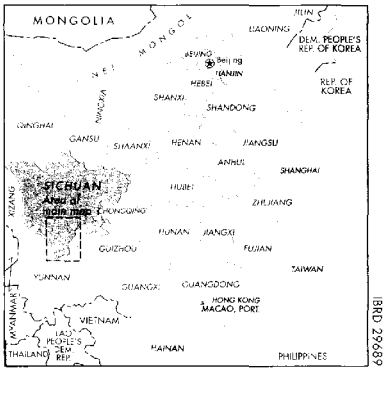
LIVESTOCK PRODUCTION:
- SHEEP
- GOAT
- DUCK
- RABBIT

AGRO-PROCESSING:
- RICE MILL
- SEED PROCESSING
- VENTILATED STORE
- FRUIT WHOLESALE

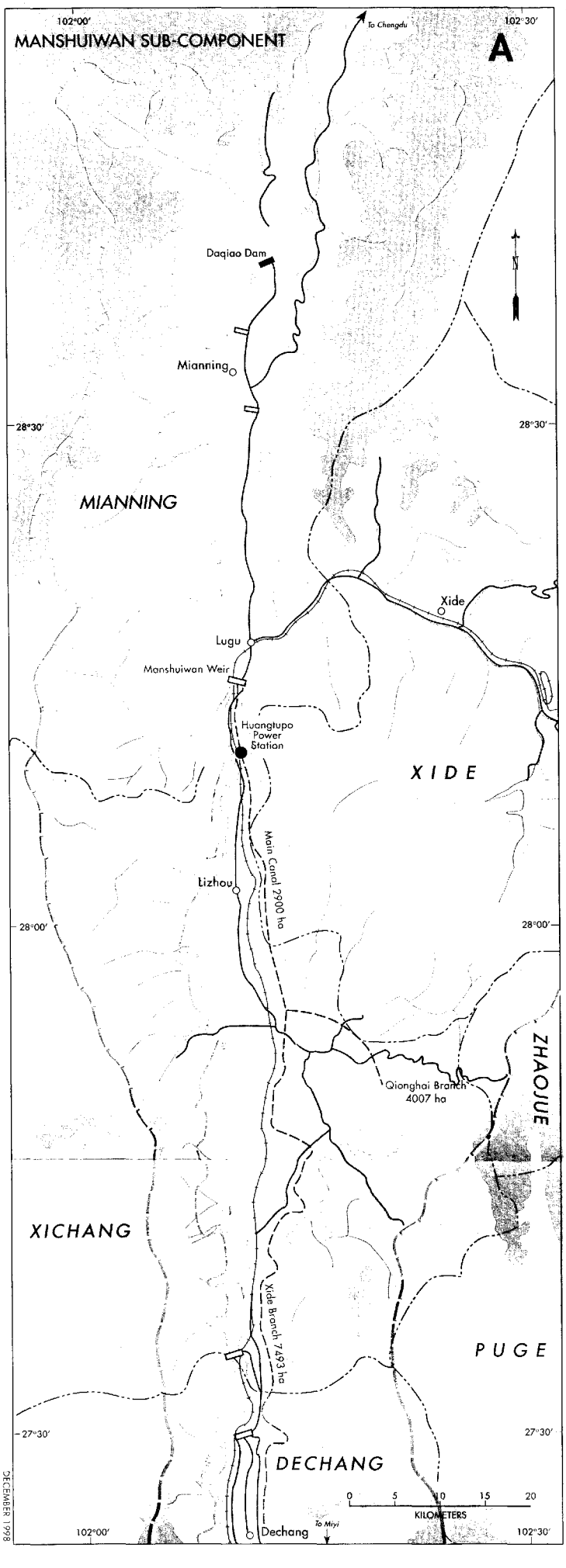
- CITIES
- REGIONAL CITIES
- NATIONAL HIGHWAYS
- NATIONAL ROADS
- OTHER ROADS
- RAILROADS
- COUNTY BOUNDARIES
- PREFECTURE BOUNDARIES
- PROVINCE BOUNDARIES

YA'AN
To Chengdu
LESHAN
GARZÊ ZANGZU ZIZHIZHOU
Mianning
Manshuiwan Irrigation
MIANNING
Xide
XIDE
ZHAOJUE
Zhaojue
Anning River
Xichang
Qionghai Branch Canal
XICHANG
Butuo
Jinsha River
PUGE
BUTUO
Xide Branch Canal
Dechang
Puge
DECHANG
NINGNAN
Ningnan
YANBIAN
Yanbian
Huangqiao Irrigation
MIYI
Miyi
HUILI
Huili
Huidong
HUIDONG
PANZHIHUA
Xiqu
Panzhihua
Renhe
Sheng Li Irrigation
To Kunming
0 10 20 30 40 50
KILOMETERS
YUNNAN PROVINCE
DECEMBER 1998





IBRD 26689

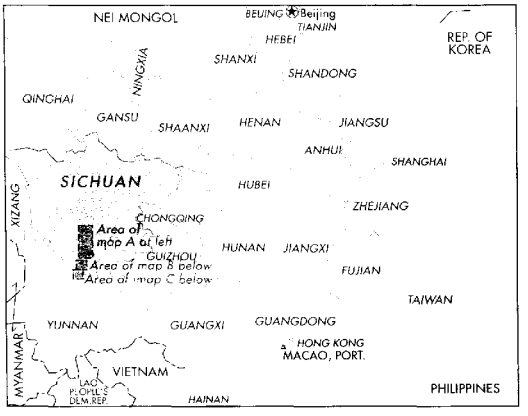


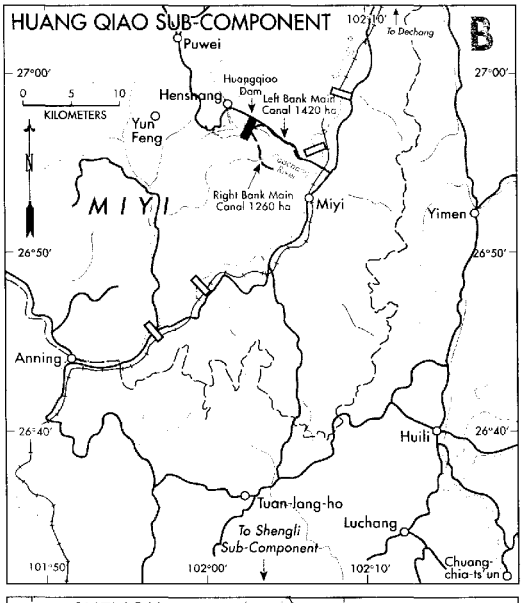
CHINA
ANNING VALLEY AGRICULTURAL DEVELOPMENT PROJECT
WATER RESOURCES DEVELOPMENT COMPONENT

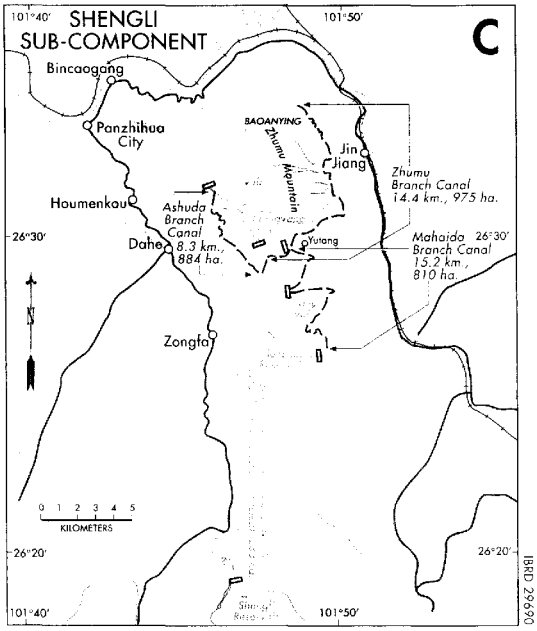
PROJECT:
- MANSHUIWAN WEIR
- CANALS
- HUANGTUPO POWER STATION
- OTHER WEIRS
- OTHER CANALS
- DAM
- WATERSHED BOUNDARY

ELEVATIONS:
- 9000 FEET
- 5000 FEET

- MAIN ROADS
- RAILROADS
- COUNTY BOUNDARIES







DECEMBER 1998

IBRD 29690