

**Document of
The World Bank**

FOR OFFICIAL USE ONLY

Report No 20683

PERFORMANCE AUDIT REPORT

CHINA

Northern Irrigation Project (Cr. 1885-CN)

Shaanxi Agricultural Development Project (Cr. 1997-CN)

Tarim Basin Project (Cr. 2294-CN)

June 29, 2000

*Sector and Thematic Evaluation Group
Operations Evaluation Department*

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

Currency Equivalents (annual averages)

Currency Unit = Country Currency =Yuan (Y)

1987	US\$1=Y3.71
1988	US\$1=Y3.71
1989	US\$1=Y3.76
1990	US\$1=Y4.78
1991	US\$1=Y5.32
1992	US\$1=Y5.42
1993	US\$1=Y5.73
1994	US\$1=Y8.50
1995	US\$1=Y8.30
1996	US\$1=Y8.30
1997	US\$1=Y8.30
1998	US\$1=Y8.50
1999	US\$1=Y8.50

Abbreviations and Acronyms

EASRD	Rural Development and Natural Resources Sector Unit of the East Asia and Pacific Regional Office
EIRR	Economic Internal Rate Of Return
FY	Fiscal Year
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
ICR	Implementation Completion Report
IDA	International Development Association
LCB	Local Competitive Bidding
MOF	Ministry of Finance
NCB	National Competitive Bidding
O&M	Operations And Maintenance
OD	Operational Directive
PMO	Project Management Office
PPC	Provincial Planning Commission
SAR	Staff Appraisal Report
SDR	Special Drawing Rights
SPC/SDPC	State Planning Commission
WRB	Water Resources Bureau

Director-General, Operations Evaluation	: Mr. Robert Picciotto
Director, Operations Evaluation Department	: Mr. Gregory Ingram
Manager, Sector and Thematic Evaluation	: Mr Ridley Nelson (Acting)
Task Manager	: Mr. Keith Pitman

ROBERT PICCIOTTO
Director-General
Operations Evaluation

June 29, 2000

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

**SUBJECT: Performance Audit Report on China
Northern Irrigation Project (Cr. 1885-CN)
Shaanxi Agricultural Development Project (Cr. 1997-CN)
Tarim Basin Project (Cr. 2294-CN)**

This is a Performance Audit Report (PAR) of three irrigation projects in China: Northern Irrigation Project (Cr. 1885-CN), Shaanxi Agricultural Development Project (Cr. 1997-CN), and Tarim Basin Project (Cr. 2294-CN).

Northern China Irrigation Project was located in two adjoining and largely arid provinces. In Inner Mongolia the objective was to improve existing irrigation and drainage over 220,000 of the 600,000 hectares of Hetao Irrigation Area. The Yennan component, in neighboring Ningxia province, developed new irrigated area of 22,000 ha and established voluntary resettlement for 11,000 families from very poor and dry neighboring counties. Both sub-components increased abstractions of irrigation water from the Yellow River, a stressed water resource. Construction costs were 96% of the total costs for Hetao and 70% for Yennan, the balance being for resettlement.

The Shaanxi Agricultural Development Project also had two components: improving and expanding the Donglei irrigation system in the Province's most developed central zone, and supplying water to rural areas in hilly Dongbian. The objectives were to boost farm production and incomes of poor households and to provide clean water through investments in irrigation, rural water supply and agricultural services. The Donglei component involved challenging engineering as water had to be lifted 137 meters using 37 pumping stations and 135 kilometers (km) of main and sub-canals. A core component was the construction of the longest such structure in China - a 1.29 km "double box" flume across the Loewe River. A wide variety of 37 non-core agro-industrial and infrastructure components were added to the project at the last minute. Organizational discord, procurement problems, cost over-runs and technical difficulties with the flume dogged the project. The completion of the main and on-farm construction has not been completed and is running five years late.

The Tarim Basin Project is in China's remote, poor and arid Western province of Xingxia, which largely comprises a high desert plateau surrounded by mountains. Development of irrigation in the Taklaman Desert utilizes abundant summer snow melt to irrigate crops such as cotton and specialized fruit and vegetables. The farmers, largely indigenous Uyghurs, were assisted in achieving greater irrigation efficiencies, improved drainage and salinity control on 220,000 ha. The project also contained radar detection and aerial prevention of hail, computerized remote water monitoring, and a wide range of training and outreach activities. Although not included in the original project design, considerable progress was also made in institutional reform at all three levels relevant to water resources management - user services and participation, bulk water supply and river basin regulation.

All three projects were relevant to the policies of both China and the Bank, which aimed to improve and complete existing irrigation schemes, and focused on grain production in poorer inland provinces. Voluntary resettlement techniques developed in Ningxia were later applied to similar projects on the Loess Plateau, including the Bank's Gansu-Hexi Corridor Project. The projects mostly met, and in some cases exceeded, physical production and income targets. The outcomes for Northern Irrigation and Tarim were rated satisfactory. Since the Bank deals with each provincial borrower separately, a lot of

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

learning has been repeated in different provinces. There was significant learning and institutional impact on all three projects, which introduced the provincial agencies to core project planning and management procedures, including competitive bidding. While Shaanxi as well as Xingxia (Tarim Project) are now in the forefront of attempts to apply policies of integrated water resource management and financial sustainability, institutional development is rated modest for Shaanxi. For the Northern and Tarim projects the sustainability is rated “likely,” while continued delays in Shaanxi merit a rating of “uncertain.” While the Bank bore some responsibility for being over-ambitious, the client appears to have resisted sound advice for long periods and failed to meet Bank procurement standards, meriting a performance rating of Unsatisfactory.

A significant omission from the Bank’s economic appraisal of the Northern Irrigation and Shaanxi Agricultural Projects was an estimate of the opportunity or resources cost for Yellow River water. Since increased dry season abstractions from the Yellow River reduce downstream flows to the water-short North China Plain, the opportunity cost of water is positive and should have been deducted from net agricultural benefits. More upstream diversion deprives downstream farmers of high value marginal water, as indicated by their willingness to pay for expensive groundwater in the dry season. Failure to make an adjustment helped ensure a viable economic rate of return, but did not indicate the true economic cost of the projects.

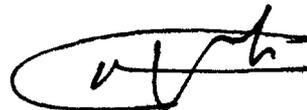
The main lesson learned was that cost-recovery really does improve project performance if it is well thought out and creates incentives for sound project identification and execution. For most China projects, negotiation and routine supervision are matters between the Bank and the Province. The Bank funds are obtained by a local currency loan from the Ministry of Finance (MOF), which assumes sovereign risk, to the Province. MOF holds the Province liable for full repayment of Bank loans in local currency and does not absorb foreign exchange risk. Failure to meet repayments, unless there are exceptional circumstances such as natural disasters or a major devaluation, will lead to automatic deduction by MOF from general purpose grants to the Province. There is thus a strong pressure to implement sound projects, which will generate the income required for repayment – a clear cascade of accountability and responsibility. Aversion to the consequences of default create an incentive for sound implementation and execution, both at project management and beneficiary levels.

A second lesson, related to the first, is that delay in counterpart funding (which bedeviled these projects in varying degrees) is a consequence of prudent debt management, not a deficiency in project design. MOF cedes authority to the provinces to negotiate project loans, but retains strict control of overall debt exposure. This is a deliberate policy allowing the province to set their own investment priorities and resolve routine annual budget competition between different projects. The MOF guarantees Bank loans but the real credit and foreign exchange risk is borne by the province and the beneficiaries, not the Bank. Even in the absence of anticipated benefits, beneficiaries must expect to make regular loan repayments.

A third lesson is that a gradual process of reform, more in tune with the client’s inclinations, rather than a “Big Bang” approach, was appropriate for China. There were substantial institutional reforms and technical innovations which were piloted on Bank projects.

A final lesson is that even with complex projects, the build-up of agricultural benefits can be very fast – both Northern Irrigation and Tarim Basin Project experienced more rapid build of benefits than comparable projects in other client countries.

Attachment

A handwritten signature in black ink, consisting of a large, stylized 'V' or 'W' shape followed by a horizontal line and a small flourish.

Contents

1. The Projects	1
Common Characteristics.....	1
Project Design, Objectives, and Components.....	1
2. Implementation Experience.....	5
Northern Irrigation Project.....	5
Shaanxi Agricultural Development Project.....	6
Tarim Basin Project.....	8
3. Outcomes.....	9
North China Irrigation	9
Shaanxi Agricultural Development.....	9
Tarim Basin.....	10
4. Ratings.....	11
5. Findings.....	12
6. Lessons Learned	13
7. Annexes and Basic Data.....	15
<i>A. Actual and Planned Financing (\$ million).....</i>	<i>15</i>
<i>B. General Project Data</i>	<i>15</i>
<i>C. Northern Irrigation Project (CR. 1885-CHA).....</i>	<i>15</i>
<i>D. Shaanxi Agriculture Development Project (CR. 1997-CN).....</i>	<i>17</i>
<i>E. Tarim Basin Project (CR. 2294-CN).....</i>	<i>19</i>
<i>Borrower's Comments.....</i>	<i>21</i>

Principal Ratings

Northern Irrigation Project (Cr. 1885-CN)

	<i>ICR</i>	<i>Audit</i>
Outcome	Satisfactory	Satisfactory
Sustainability	Likely	Likely
Institutional Development	Partial	Substantial
Borrower Performance	Satisfactory	Satisfactory
Bank Performance	Satisfactory	Satisfactory

Shaanxi Agricultural Development Project (Cr. 1997-CN)

	<i>ICR</i>	<i>Audit</i>
Outcome	Unsatisfactory	Unsatisfactory
Sustainability	Likely	Uncertain
Institutional Development	Partial	Modest
Borrower Performance	Satisfactory	Unsatisfactory
Bank Performance	Satisfactory	Satisfactory

Tarim Basin Project (Cr. 2294-CN)

	<i>ICR</i>	<i>Audit</i>
Outcome	Highly satisfactory	Satisfactory
Sustainability	Likely	Likely
Institutional Development	Substantial	Substantial
Borrower Performance	Satisfactory	Satisfactory
Bank Performance	Satisfactory	Satisfactory

Key Staff Responsible

Northern Irrigation Project (Cr. 1885-CN)

	<i>Task Manager</i>	<i>Division Chief</i>	<i>Country Director</i>
Appraisal	Lang S. Tay	Joseph Goldberg	Shahid Javed Burki
Completion	Lang S. Tay	Geoffrey Fox	Yukon Huang

Shaanxi Agricultural Development Project (Cr. 1997-CN)

	<i>Task Manager</i>	<i>Division Chief</i>	<i>Country Director</i>
Appraisal	Daniel Gunaratnam	Joseph Goldberg	Nicholas Hope
Completion	Daniel Gunaratnam	Geoffrey Fox	Yukon Huang

Tarim Basin Project (Cr. 2294-CN)

	<i>Task Manager</i>	<i>Division Chief</i>	<i>Country Director</i>
Appraisal	Daniel Gunaratnam	Joseph Goldberg	Shahid Javed Burki
Completion	Daniel Gunaratnam	Geoffrey Fox	Yukon Huang

Preface

This is a Performance Audit Report (PAR) of three irrigation projects in China: Northern Irrigation Project (Cr. 1885-CN), Shaanxi Agricultural Development Project (Cr. 1997-CN), and Tarim Basin Project (Cr. 2294-CN). Northern Irrigation was approved in March 1988 for a credit of \$103 million and closed in April 1998, 22 months behind schedule. Shaanxi Agricultural Development was approved in March 1989 for a credit of \$88.45 million and closed in June 1997 following a three-year extension. Tarim Basin was approved in May 1991 for a credit of \$125 million and closed in February 1998, two months ahead of schedule. All three projects were fully disbursed.

This report was prepared by the Operations Evaluation Department based on a review of the Implementation Completion Reports (ICR), the Staff Appraisal Reports (SARs), loan documents, project files, transcripts of Board proceedings, and on other Bank documents. As it was not possible to schedule a field visit to the three projects in time to prepare this audit, the analysis was based entirely on the desk review and on interviews with more than 30 Bank staff.

Out of 15 completed irrigation projects in China the only others to have been audited are the North China Plain Project (Cr. 1261) in 1989, and the Gansu Provincial Development Project (Ln. 2812/Cr. 1793) in 1998. This audit therefore redresses this shortage. It also provides a baseline with which to assess the impact of the Bank's 1993 policy on Water Resources Management, which is the subject of an ongoing OED sectoral evaluation. The objectives of the audit are as follows:

- Extract lessons of experience that may be of interest to other countries in Asia that share some of China's characteristics.
- Contribute to ongoing dialogue between the Bank and China on the future direction of lending in a period when institutional and governance issues will be the main considerations in solving serious water and environmental problems.
- Provide a check on the concurrent and parallel review of the Bank's water policy in China, by examining some of the projects in depth.

Following standard procedures, copies of the PAR were sent to the government of China for comments and the full responses are included in Annex B. Errors of fact have been corrected and differences of opinion are pointed out in footnotes to the text.

1. The Projects

1.1 China's cumulative lending of more than \$32 billion makes it the largest client of the World Bank. Of that amount, **\$3.18 billion** billion is classified as irrigation and drainage. Lending to China's agricultural sector has been in a broad spectrum of subsectors and agro-ecological zones. This, however, is only part of the Bank's involvement in the financing of water-related activities. If all the relevant components of water supply, sanitation, hydropower, environment, and forestry projects are also counted as relating to water resources management, the water-related investments in the China portfolio totals over \$8 billion or 25-30% of cumulative lending.

Common Characteristics

1.2 The three projects audited here, Northern Irrigation, Shaanxi Agricultural Development, and Tarim Basin, have much in common. All three invested primarily in physical improvement and extension of existing irrigation systems in areas that would otherwise be arid and barren. Each of the projects had already been identified by the client and were in an advanced state of preparation before the World Bank appraisal started. While the loans were made to Government of China (GOC), the clients and main beneficiaries were the provinces. Financial participation by lower levels of government (the lowest being the townships and counties) was high, and loan repayment pressure was strong. The rigid cascading downward of repayment obligation from the Ministry of Finance, to the province, prefecture, county, and individual beneficiaries is unlike the system adopted in such other large countries as India and Indonesia.

1.3 The projects were approved at a time when the Bank did not have a comprehensive water resources policy, neither had there been an irrigation sector review or significant economic or sector work for the irrigation and drainage subsector in China. On the other hand, the projects were directly relevant to the Chinese water sector policy, which at the time focused on constructing, rehabilitating and improving irrigation infrastructure as a means to growth, food security, alleviation of poverty, increased rural employment and flood control. All three projects had social-poverty objectives and were in provinces regarded as poor (Inner Mongolia, Ningxia, Shaanxi, and Xinjiang).

1.4 All three projects had generally satisfactory outcomes despite technically demanding engineering works. But to varying degrees the projects suffered significant technical challenges aggravated by procurement and funding problems, which delayed completion and realization of benefits. Moreover, the multi-component designs amplified a demand for intensive supervision and strained Bank resources.

Project Design, Objectives, and Components

1.5 *The Northern Irrigation Project* was the fifth Bank-financed irrigation and drainage project in China. Its two main components—irrigation subprojects in Hetao-Western Block (Inner Mongolia Autonomous Region) and Yinnan (Ningxia Hui Autonomous Region)—had distinct sets of supervision requirements and project management entities. The Ningxia subproject receives irrigation water by multi-stage pumping from the Yellow River while Hetao is a run of the river diversion.

NORTHERN IRRIGATION PROJECT	
Credit no: 1885-CN	Approved: March 1988
Total cost: \$234.3 million	Effective: November 1989
World Bank credit: \$103 million	Closed: April 1998
Cofinancing: None	Disbursement record: fully disbursed
Objectives:	
<ul style="list-style-type: none"> • To increase the efficiency and profitability of agricultural production in the Inner Mongolia Autonomous Region • To alleviate absolute poverty in the Ningxia Hui Autonomous Region 	
Components:	
In Inner Mongolia:	
<ul style="list-style-type: none"> • Rehabilitate irrigation and drainage over an area of 210,000 ha in the Hetao Irrigation Area • Provide agricultural support and extension services 	
In Ningxia Hui:	
<ul style="list-style-type: none"> • Upgrade and complete irrigation and drainage works on 22,000 ha and developing new irrigation over 14,200 ha at Yinnan • Voluntary resettlement of 11,000 families below the poverty line on the newly developed land, complete with infrastructure and basic social services • Staff and farmer training with a focus on women farmers and technicians • Technical assistance for the feasibility study of 130,000 ha of existing cultivated area and 100,000 of potentially irrigable land at Yinnan 	

1.6 Although it was large, the Hetao subproject was an enhancement of 600,000 ha of irrigation that had already been established and supplied from the Sanshenggong Diversion Weir. A key institutional goal of the subproject was to create a new unified general bureau with both irrigation and drainage responsibilities.

1.7 The smaller-scale Yinnan subproject included the voluntary resettlement of 11,000 families living in wretched conditions and below the poverty line in adjacent hilly and arid tracts. The settlers were to be supplied with infrastructure, basic social services, and staff and farmer training with a focus on women farmers and technicians.

1.8 Physical construction and equipment accounted for 96% of subproject costs for Hetao. For Yinnan 70% went to civil works, on-farm development, electrification, and equipment; training, technical assistance, and engineering management and resettlement accounted for the remaining 30%. Bank expertise at integrated projects, land leveling, drain excavation, and on-farm development and drainage were cited at appraisal as justifications for Bank participation.

1.9 *The Shaanxi Agricultural Development Project* also had two components: improving and expanding the Donglei irrigation system in Shaanxi's most developed central zone, and supplying water to rural areas in hilly Dongbian. The objectives were to boost farm production and incomes of poor households and to provide clean water through investments in irrigation, rural water supply, and agricultural services.

SHAANXI AGRICULTURAL DEVELOPMENT PROJECT	
Credit no: 1997-CN	Approved: March 1989
Total cost: \$237.53 million	Effective: December 1989
World Bank credit: \$88.45 million	Closed: June 1997
Cofinancing: None	Disbursement record: fully disbursed
Objectives:	
<ul style="list-style-type: none"> • To boost farm production and incomes of poor households • To provide clean water through investments in irrigation, rural water supply, and agricultural services. 	
Components:	
<ul style="list-style-type: none"> • Improving and expanding the Donglei irrigation system and supplying water to rural areas • Providing potable water and irrigation in Dingbian County • Establishing fish ponds and poultry operations • Constructing seed processing and certification plants and supplying fertilizer • Constructing and equipping agro-processing pilot plants • Local and international training 	

1.10 The Donglei component was designed to add 54,000 ha of new irrigation to the Donglei system and improve 31,000 ha more. This required construction of major pumping stations, canals, and limited drainage work. Water had to be lifted 137 meters using 37 pumping stations and 135 kilometers (km) of main and sub-canals. A core component was the construction of a 1.29 km "double box" flume across the Loewe River. The independent design institute was to prepare the design for this challenging component and then local competitive bidding (LCB) was to be used to select a contractor. The Bank's irrigation advisor was very enthusiastic about the quality at entry: "the application of careful analysis, available technology and the sensible judgement is exhibited in almost every matter... certainly the quality of this feasibility study will be in the top 10% of Bank accepted studies... the degree of water control and measurement is superior to most projects encountered elsewhere."

1.11 One relatively late component¹ was to provide potable water and irrigation to Dingbian County, in the remote NW corner of the province, where there were high levels of fluoride in the domestic water supplies as well as high levels of poverty.² Additional components were added in profusion in what was described as "Donglei's new look." These components were intended to address the lack of support services.³ The project acquired \$80 million of new components including aquaculture, poultry, seed processing and certification, an agro-processing plant, and local and international training in a wide variety of subjects. Several interviewees also suggested that another reason for the processing component was to generate additional income which, while not directly channeled to repaying loans for irrigation, would increase the local governments'

1. "The Diangbian water supply component was an additional component introduced on the last day of the appraisal mission in Xian." File Notes, May 1988

2. "70% of the population in some counties are seriously afflicted with fluorosis." Aide Memoire 5/4/1998

3. Another factor accounting for expansion of loan size and number of components may have been related to disbursement targets - "The proposal for expansion was suggested by... the External Loans Department, SPC, during a December visit to the province and is apparently a response to Bank concerns about the relative smallness of provincial projects being put forward by SPC." Project File 1/25/98

income. The implication was that anticipated returns from irrigated agriculture alone would be an insufficient income base on which to levy cost-recovery fees.

1.12 The rationale for Bank involvement as expressed in the Initial Executive Project Summary (IEPS) became the Bank's ability to "transfer new pump technologies...upgrade and mechanize the present method of construction of large-line canals." Further expansion of non-irrigation components was justified in terms of leverage on policy and support for China's integrated development policy.

1.13 The total cost of the project has grown from \$237.5 million at appraisal to \$300 million at closing. The project's main irrigation components should have been completed by December 1999, but this has not been confirmed.

1.14 *The Tarim Basin Project*, through control of salinization and more extensive distribution of water, was expected to improve the environment of the Xinjiang and especially to sustain the tree cover, which is 12-18% of the region's cultivated area. The project was so environmentally rigorous, in fact, that it was criticized by the region's management for going too far.⁴ The ultimate beneficiaries of the project were to be the indigenous Uygur peoples of Xinjiang.

TARIM BASIN PROJECT	
Credit no: 2294-CN	Approved: May 1991
Total cost: \$212.1 million	Effective: October 1991
World Bank credit: \$125 million	Closed: February 1998
Cofinancing: None	Disbursement record: fully disbursed
Objectives:	
<ul style="list-style-type: none"> • To expand irrigated area for crop production • To improve agricultural services • To promote livestock development in southern Xinjiang Region, one of the poorest and least developed areas in China. 	
Components:	
<ul style="list-style-type: none"> • Irrigation and drainage improvement and expansion over 200,000 ha in the Yerqiang and Weigan river basins • Hydropower development of 21MW capacity in the Yerqiang basin • Development of agricultural and livestock support services • Restoration of the Tarim River ecosystem • Upgrading of a hailstone suppression unit including radar and cloud seeding equipment 	

1.15 In some ways the Tarim Basin Project was a more amenable and homogenous environment than the other projects in which to take institutional initiatives. In projects on the great rivers, which span more than one province, the relative weakness of the Ministry of Water Resources in local political issues is a constraint on river basin management. This is hardly an issue with the Tarim Basin, where the water resource lies entirely within one province. Social

4. "Pessimistic statements by pre-appraisal mission environmental consultants, now proposes a long series of investments whose main justification is ecological protection. These include Y 8 million for a drain 80 km long which will work about three weeks per year and reduce salinity in the downstream Tarim by only 2%" Project files – comments on Yellow SAR, September 1990

cohesion is strong and the isolation of the basin from China's main North-South problems of quality and allocation make integrated water resources management easier.

1.16 Although the speech made at negotiations emphasized macroeconomic considerations, the Tarim project was now being marketed as an example of World Bank intellectual and financial support for reforms that the Bank "has begun to address explicitly, not only in its sectoral dialogue but also in formulating individual investment operations." The Tarim Basin Project was to be a model "for eradicating poverty in arid zones. The integration of water resources development with environmental protection and enhancement is a key focus for sustainable growth under the project." Institutional reform separating regulatory management of the water resource and main system operation and maintenance (O&M) was mandated. Sustainable Irrigation Development Districts (SIDDs) and water pricing were to ensure sustainable and efficient operations at all levels. Civil works for irrigation and drainage, and the hydropower station comprised 85% of costs, technical assistance/training/study trips accounted for 2%, and the balance of 13% went for agricultural support services and ecological restoration and forestry.

2. Implementation Experience

2.1 All three projects were influenced by a series of macroeconomic and agricultural policy adjustments that occurred during implementation. Some, which affected inflation and in turn put pressure on local funding, acted to slow the physical implementation. The devaluation of the RMB, combined with deregulation of grain and cotton prices, on the other hand, provided a strong price incentive for adoption of the technology for fine-tuning irrigated agriculture.

Northern Irrigation Project

2.2 Although startup was smooth, the implementing agency was reluctant to use international consultants, partly due to cost and language difficulties. An Australian engineering firm, however, was recruited to assist in the preparation of international competitive bidding (ICB) documents. Although several other obstacles had to be overcome in the procurement process, they resulted in considerable learning about how to comply with Bank procedures. By September 1994, some 39 ICBs, 5 LCBs, and 37 direct purchases had been made. Supervision reports and project correspondence indicate that some unconventional practices were used, but the Bank was flexible where the circumstances warranted.⁵ In one case the Bank agreed to the borrower's request to reduce planned procurement of tractors from 5,500 to 500 as there was sufficient private demand and state procurement was not necessary. Further flexibility was shown by the ability of the project to absorb some 3,600 unofficial settlers.

2.3 The level of reporting for the Hetao subproject is more complete than that for Yinnan, which appears to have run more smoothly. The resettlement component of the Yinnan subproject was very successful, and the Bank's country office in China even recommended that "this example be documented as a case study and promulgated widely.... A strength of the project has been the integrated approach to development, involving engineering, agricultural science and agronomy, and the farmers in scheme layout and design and O&M." This was accomplished with

5. In one case, the project borrowed steel rods from the Regional Planning Commission. The Bank advised that "from an accounting cost point of view we would urge you to procure 3,100 MT of steel wire rods by ICB and return them to the RPC."

little technical assistance. By June 1995, cumulative expenditure on physical components was 99% of disbursements from the bank loan, while expenditure on consultants, overseas training, and study visits was less than 1%. Lessons learned here were applied in a later poverty-targeted project, the Gansu-Hexi Corridor (approved in 1997), which is assisting 200,000 people to emigrate from a degraded upland area in neighboring Gansu province.

2.4 While the social situation for Hetao was less complex, engineering was demanding, the design called for multiple levels of pumping stations and canal drains. As implementation progressed more attention was paid to O&M issues, although this was still very much a non-institutional approach that emphasized cost-recovery agreements and preparation of O&M plans and manuals. Underlying incentive problems and financial governance were hardly mentioned. Of particular importance was the role of the farmers' labor contribution in cost estimates—since the imputed cost of the farmers' labor was nearly 80% of the estimated O&M cost, cost recovery might be high with no implication as to the adequacy of O&M. The notes to the ICR mission indicated that the Bank considered the maintenance problem serious.⁶ Similar concerns were also expressed in relation to the Ningxia component.⁷ At this time, the Bank was optimistic and thought it was sufficient to increase water charges and for project management to prepare a strategic position paper on O&M.

2.5 The project financed 41 person-months of travel for 80 staff (including 4 women), who visited Australia, France, Holland, India, Jordan, Morocco, Pakistan, and the United States. These trips reinforced enthusiasm for developing an ambitious Trunk Canal Monitoring System using radio telemetry supported by technical assistance from a U.S. engineering company. The monitoring component was the only one that was really late; it was successfully completed about two years behind schedule. Although the inflation induced by devaluation of the RMB caused some funding problems, the main components were successfully completed on time. Later in the project, concern increased about the level of industrial and household effluent being discharged into the canals and threatening a lake that is a major wildlife preserve for birds. However, neither this issue nor the non-compliance with the O&M covenants reached closure by the end of the project files. While the Bank project was absolved of blame, the irrigation project had created the means for industry to pollute, and strong representations were made to the client about establishing a Lake Management Authority, and adopting a systematic monitoring system for water quality. The irrigation system had actually decreased salinity.

Shaanxi Agricultural Development Project

2.6 Even before the project was approved there were indications of future problems. First, the WRB (the provincial Water Resources Bureau or line ministry) wanted the project to be prepared by a design institute and then put out to tender through LCB. Some Bank advisors preferred another approach. In view of the lack of design institute experience in structures of this kind, another advisor thought that the project should take a "design-build" approach with strict pre-qualification of local and international contractors, followed by an ICB process.⁸ Second, an

6. "With the very difficult soil conditions and extreme weather prevalent in the project areas, ongoing maintenance costs are likely to be high. If maintenance is under-funded, there is a real risk that some parts of the system will not be sustained." Review of ICR April 1997

7. "We would like to emphasize that benefits from the new irrigation areas will only be sustained if maintenance funding is allocated at the required level." File 8/2/1995

⁸ The Region disagreed with this interpretation of the file documents and regards the storyline as inaccurate and incorrect.

unusual management structure and project organization was envisaged. The project management office (PMO) was nominally directed by a part-time appointee from the PPC, but the deputy was appointed from the WRB). The deputy was to have executive powers to approve designs and expenditure, and apply directly for disbursement of Bank funds to the MOF.

2.7 Early in the project it also became apparent that the implementation schedule was too optimistic. It failed to take account of the size and complexity of the schemes, and of the supervision needs of its numerous components, each being implemented separately by different entities. This was exacerbated by the project management structure, which put all of the separate sub-component staff under one roof. The project was directed by an executive project director from the WRB, who almost immediately confronted restrictions on the ability to disburse funds and approve design decisions. Faced with a simultaneous shortfall in local funding due to inflation of construction costs and procurement delays, Shaanxi Agricultural Development was declared a “problem project” by the end of 1991.

2.8 Funding difficulties were even more serious for the 37 non-irrigation subproject entities, both enterprises and government bureaus, which were to receive 104 loans from the Bureau of Finance. With activities as diverse as poultry and fish farms, citric acid production from sweet potatoes, slaughterhouses, pig-breeders, rabbit farms, seed plant, fruit and honey processing plant, supervision demands were high. Concerns were also being expressed about the future financial viability of some of them. Some aspects of the recommendations made by the supervisory team were contrary to sound banking principles – for instance, the provinces were pressured to ask the banks to give favorable treatment and working capital to specific enterprises.

2.9 Shaanxi Province had difficulty complying fully with the Bank’s procurement policies. The province acknowledged that this was related to management and organizational difficulties in the project design. Matters came to a head in late 1992 with differences between the project management office (whose executive came from the WRB) and the PPC, over the ambitious Loehe Flume. The contract for the flume had been awarded without the Bank’s prior approval. With firm support from Bank management, the supervisory staff were able to persuade the vice-governor to reorganize the project. The sub-components remained, but the project staff for the non-irrigation components left the project building and went back to their departments, while the executive director of the PMO was given increased authority. There were also some frictions between the Bank’s regional supervisory staff and the legal and procurement divisions of the Bank in Washington, D.C.⁹

2.10 While the progress of the main Donglei and Dingbian components continued to be slow, the other components progressed rapidly and the Bank fielded a wide range of consultants whose advice seems to have been appreciated by the various enterprises. In 1994, another major procurement incident involving the purchase of steel bars caused serious delays. A Chinese importer had failed to deliver the steel rods (originating in Brazil) but had managed to persuade the International Tendering Company (ITC), the central government procurement supervisor for ICBs, to further extend a letter of credit to them. As a result of this incident the Bank made clear that (a) the ITC had no authority to extend letters of credit without instruction from the PMO and (b) “a bidder’s performance on past contracts should be taken into account when awarding any new contract to that bidder.” The need for ICB bidding for high-technology pumps was also

9. “On breeding stocks and feed, we long ago determined that we had been fools to put this under competitive bidding of any kind ...Here we are buying genes, not items. We want the best genes we can find, not the cheapest..” Project Files, Vol. 5, April 1993 Mission Report.

demonstrated – two of the high head pumping stations were supplied with pumps that had serious defects.

2.11 With local funding constraints exacerbating slow progress, the main project components were delayed and the loan was eventually extended by three years. Much of the delay was attributable to improper design of the 1.29 km flume – technical difficulties that might have been avoided if the client had had a more realistic appreciation of the difficulties involved. The Bank's continued support and help in resolving the problems appear to have been appreciated by the province, as evidenced by several substantial follow-on projects in Shaanxi. The delays also helped the Bank remain involved longer in non-water resources components, organizing training in financial management, and further visits from technical specialists. Nonetheless, the region still concluded "the Agro-processing, Livestock, and Seed Production Processing Components should have been financed under a separate loan. Their addition to the project, according to the ICR, resulted in complicated coordination arrangements during implementation."

2.12 Training tours appear to have engendered enthusiasm for new ideas. The client was responsive to bank proposals that they transfer O&M responsibilities and develop the role of water user associations. This would make the final users clients of a financially independent water supply corporation. In Shaanxi at least, the Bank can claim credit for successfully promoting this water sector reform. Despite progress by the final supervision in 1997, there were still funding problems, delays, and continued arguments over the flume. The ICR assumed that the irrigation network and land shaping would be completed by December 1999, although some benefits had started flowing in 1997. The project was five years late and supervision reports rated implementation progress "highly unsatisfactory."

Tarim Basin Project

2.13 Construction costs increased by about 40% in the first year and only 50% of the first year's program was completed, but in 1993 progress was more rapid and the Bureau of Finance was innovative, consolidating various sources of finance and obtaining a loan from the Agricultural Bank of China to meet shortfalls.¹⁰ In November 1995, reports appeared in the press claiming the use of political prisoners as labor for project construction works. A subsequent investigation by the Bank failed to substantiate these accusations, which were not pursued further by those making the original claims. In 1995, preparation for Tarim II started and the existing project was declared a success. Some frustrations at the Bank's procurement regulations also surfaced on this project and contributed to some delays.

2.14 The SAR scarcely mentioned institutional issues and policy objectives for sector reform.¹¹ The cost-recovery model for this project shared the same weakness as the other projects – namely, the total returns from all development activities were being used to fund repayments of all loans. Agricultural taxes and other levies were commingled with general funds. During implementation there was a change in attitudes and considerable buy-in by the client to the technical and institutional innovations the Bank was recommending to sustain adequate O&M performance. This was subsequently incorporated in Tarim II Project which formalized new arrangements and procedures for a water fee that would be an autonomous source of funding for

¹⁰ The region points out that rationalization of designs and introduction of competitive bidding reduced costs and enable the scope of the project to be expanded.

¹¹ The task-manager thought this was not a deficiency but because there were few problems to address.

an enterprise (the water user associations and, by onward payment, for the water supply corporation).¹²

2.15 One issues that arose during implementation was not resolved in the files or the ICR: it remains unclear whether the water charges have increased to the 4.8 fen/m³ required by the project agreement (“to recover all O&M and a portion of capital costs; and provide a plan for O&M and water charges by December 31, 1999”).¹³

3. Outcomes

North China Irrigation

3.1 **Overall project outcome was satisfactory.** It was *relevant* to the Chinese water sector policy at the time (para. 1.3). In Ningxia, 14,350 ha of desert wasteland has been transformed into sustainable irrigated cropland, served by a network of roads, 6 new townships and 30 settlement villages, supporting a population of about 55,000 people. This development has not only created economies of agglomeration with the 17 adjoining townships but also relieved pressures on environmentally degraded lands in the old villages where the settlers originated. It therefore was *effective* and achieved its objectives. Although not explicit goals in the SAR, the Water Resources Bureau and project management staff acquired substantive capacity in managing resettlement and relationships with the World Bank. Farmer training was 185% above the SAR target. While OED has not been able to confirm the ICR’s re-calculation of ERR from 17% to 35%, the increases in agricultural production were clearly substantial – even allowing for errors, production of wheat maize, rice, millet, and oil crops were very high (as would be expected given the without-project scenario of barren land). Corresponding income goals and, hence, poverty reduction were equally convincingly achieved. Establishment of on-farm windbreaks and protective forest belts have had an unambiguously positive impact on fragile environmental conditions. The project, therefore, was *efficient*.

3.2 While irrigation and drainage improvements in Hetao were marginal, they were substantial in absolute terms – the capacity of the main trunk canal increased from 480m³ /s to 520 m³ /s, and the degree of water control and drainage increased productivity on an area of over 2,000 km² of existing cropland. Environmental impact is harder to assess – while salinity did improve, there were unanticipated increases in discharges by urban polluters who were now able to use the irrigation system and lake as a waste sink. It is unclear from the project files and ICR whether this situation is under control.

Shaanxi Agricultural Development

3.3 **Overall project outcome is rated unsatisfactory.** The project was broadly *relevant* to the Chinese water sector policy at the time (para. 1.3). While the outcomes for the supplementary non-irrigation components were satisfactory, they comprise only 23% of the total cost. Although their addition to the project was questionable, the best was made of a bad situation. Given the genesis of the non-irrigation components, it is difficult for the Bank to claim a mastery of

¹² There was some disagreement amongst Bank staff as to how significant a change from traditional practices this formalized Sustainable Irrigation Development District (SIDD) system represents.

¹³ The region commented that “Water charges are increasing year by year and sustainability will be assured.”

integrated projects just because these components performed.¹⁴ The *effectiveness* of the project was therefore deficient. That some components came in under cost (when measured in \$) had more to do with exchange rates than project management. The revised ERR (20%) is predicated on no further delays in completion of irrigation construction, and of the sustainability of benefits.¹⁵ The first condition for a satisfactory ERR has not been attained.¹⁶ If the anticipated financially autonomous water company could be seen to have been established, along with such innovations as auctions, leasing and management contracts, this alone would be a good reason for rating the outcome as marginally satisfactory.¹⁷ The *efficiency* of the project is however in doubt. The scope of the successor Guanzhong Irrigation Improvement Project (with 10% of the costs for software elements) lead the audit to be optimistic, but this is based on secondary data and not a field visit.

3.4 Although the Dongbian subproject also had difficulties, it was difficult and undertaken for poverty, social, and health reasons. While the main pipeline, pumping, and treatment works have been completed and tested for commissioning, in the ICR the water component is reported as only 75% complete. Neither have the irrigation works been completed. The Donglei irrigation and non-irrigation components appear to have received much more attention and supervision than Dongbian, and hence, it is difficult from the available information to get a firm handle on either the outcomes or implementation problems. However, since it only represents 15% of the costs its impact on overall outcome is muted.

Tarim Basin

3.5 ***The outcome for Tarim is satisfactory and confirmation of successful completion and implementation of O&M reforms would have justified upgrading this to highly satisfactory.*** In addition to being *relevant* to Chinese water sector policy at the time (para. 1.3), all physical targets for irrigation and drainage were achieved and in many cases exceeded those set in the SAR. Livestock benefits were also higher than anticipated. It is estimated that canal lining saved 940 million m³ of water, reducing waterlogging, and enabling expansion of irrigation by 73,000 ha, while improving supply to 113,000 ha of stable and low-yield areas. The drainage improvements lowered the water table and reduced soil salinity over 300,000 ha. Hail damage was reduced by about 90 percent (although there are doubts about financial sustainability under present arrangements). As a result, crop yields increased 20-47 percent in stable areas, 68-118 percent in low-yielding areas and land use shifted towards higher value crops (e.g., cotton). Overall production increased 19% in grains and 69% in cotton, exceeding yield and area targets, as well as being achieved more rapidly than expected. Farm family incomes increased in constant terms by 64 percent in Yerqiang Basin and 72 percent in Weigan, with 80% of agricultural benefits accruing to the poor indigenous Uygurs. The project was therefore *effective* and achieved its objectives.

¹⁴ And the achievements were substantial, establishing for instance, the entire genetic stock for chicken farming with 3-stage poultry breeding for broilers and layers.

¹⁵ None of the three projects provided sufficient detail for an independent re-evaluation of the ERRs by OED. This is in contrast to the exemplary economic analysis present in the PAD for the new Shaanxi Guanzhong Irrigation Improvement Project, where everything is transparently presented and relatively easily recalculated.

¹⁶ "Revised ERRs...are based on completion of works by December 1999, and the introduction of O&M institutions." Implementation Completion Report, no. 18127, May 1998, paragraph 13. According to Mission Staff Shaanxi has still not been completed.

¹⁷ Incremental benefits could then be claimed for the effect on province-wide O&M standards.

3.6 Free markets for grain are now in operation and account for 95 percent of incremental production sales. There was also a marked increases in sheep production, enabled by better extension services, crop residues, and byproducts – but this was offset by a fall in goat production due to a decline in cashmere prices. While the cost-recovery covenant does not seem to have been kept, this is a minor matter – the real question being “will the proposed new institutional arrangement and fee structure ensure effective and efficient operation and maintenance and avoid premature deterioration of the irrigation and drainage systems?” Although the audit had insufficient information to re-compute ERRs, the ICR’s claim that returns are about the same as estimated at appraisal, is plausible on the available data (higher than anticipated benefits but a delay in completion) and the project can be considered *efficient*.

3.7 The changes in organization, financial incentives and capacity were substantial. There was also an improvement in the efficiency of WRB contracting with the use of competitive bids for civil works both reducing costs and improving quality.

4. Ratings

North China Irrigation

4.1 The outstanding performance in Ningxia and the satisfactory outcome for Hetao would justify a **project outcome** rating of **highly satisfactory** but the outcomes could not be confirmed and the project is rated satisfactory. While the audit agrees that **sustainability is likely**, there is still some residual uncertainty surrounding the environmental and O&M issues. A new integrated Irrigation and Drainage Bureau was set up and the existing institutions learned a lot and were exposed to a wide international body of experience – hence the **substantial** rating for **institutional development**. Both **Bank** and **borrower performance** is judged to be **satisfactory**.

Shaanxi Agricultural Development

4.2 While the ICR does rate outcome as **unsatisfactory**, this contradicts the computed ERR and rating of **likely sustainability**. There was **substantial institutional development** resulting from government programs and models of water management. This experience helped the Bank formulate the concepts of the SIID/ Water Service Corporation framework for water resource management, and subsequent follow-on projects, the audit would judge the **outcome marginally unsatisfactory**. The project, however, has still not been completed so we concur with the ICR Rating of **Unsatisfactory**. Neither **Bank performance** nor that of the **borrower** can be considered entirely satisfactory – the Bank for taking on a project it knew was too complex, and the client for hubris and failing to heed sound advice. The project is more than five years late in yielding full benefits, but it was not an unmitigated disaster - it represents efforts and achievements in a process of steady learning on a path to better water resources management. On balance, however, the main burden of blame for errors committed must rest on the borrower’s side and performance is judged **unsatisfactory**.¹⁸

Tarim Basin

¹⁸ Borrower pointed out in comments received, that Shaanxi is a poor province and the government did its best for the project and thus should not be blamed.

4.3 While appreciating the reasons that the ICR rates the **outcome** to be highly satisfactory, the audit is not able to confirm this and rates the project **satisfactory**. Although there are lingering doubts about **sustainability**, neither the failure to abide by an arbitrary cost-recovery performance, nor the doubts about future funding of the hail suppression stations, are sufficiently important to justify downgrading the rating from **likely**. Likewise, there is no evident justification for changing the **institutional development** rating of **substantial** or the **Bank and borrower performance** ratings from **satisfactory**.

5. Findings

5.1 Project documents do not indicate that stakeholder participation was other than high, and while numbers of women receiving project training are listed, there was little discussion of gender issues. Along with other aspects of “voice” the national and provincial governments consider the existing social and political system ensures adequate stakeholder participation in project design and policy. The projects complied with Bank operational guidelines and on involuntary resettlement and the environment, they are in accord with the Bank’s safeguard policies. Considerable attention has been paid to both of these sensitive areas, at appraisal and during implementation.¹⁹

5.2 Benefits tended to be overstated and were not supported by transparent calculations and statement of assumptions. Expressing income increases in current prices, the common failure to elaborate the assumed “without-project” situation, and the effect of a declining RMB also led to an overstatement of benefits. In one analysis, the exchange rate from the beginning of the period was used for all conversions. Two of the projects were not completed by the time of the ICR, but the economic analysis assumed both sustainability of benefits and completion on time. While reservations must be expressed about the extent of the economic benefits presented for these projects, it seems clear that they have been substantial and are potentially sustainable

5.3 Although full recovery of O&M, and in some cases a proportion of the capital cost, was covenanted in all three projects, this did not ensure adequate O&M. The existence of many different development levies and the role of construction line ministries as collectors for the provincial treasury, further divorced cost-recovery performance from irrigation performance and sustainability. Acknowledgement of the overriding need to channel funds from users, to the budget of an accountable service organization seems has grown. Later Bank supported projects incorporate SIDD components.²⁰ Nonetheless, there is still uncertainty about the sustainability of the project infrastructures. Effective and efficient O&M cannot be assured without institutional reforms to ensure that water charges are based on the criterion of sustainability and efficiency, and that the fees collected are applied efficiently to the O&M activities.

19. Comments from an OED internal review of the Wanjiashai Water Transfer Project, for instance, would apply equally to the audited projects: “the effectiveness of the people’s (beneficiaries) participation in the rural and the urban development works in China through the village committees and the municipalities appears to be quite effective, the project documents generally lack a good description of the conceptual and the procedural aspects of participation. It also then is not clear how far does the participation travel up to influence the management and the planning decisions at the top. ... The non-clarity of the stakeholders’ participation, and the description of the role of women stand out as the only weak areas in the China projects.”

20 Some Region staff expressed the view that SIDD addressed a non-existent problem and that “the existing system institutions are already efficient.” The view expressed in the ICR was that “The Yerqiang and Weigan irrigation schemes have been in existence for many years and have operated successfully.” (para 28)

5.4 Although safeguards were built in, significant environmental deterioration has occurred from household and industrial disposal of waste products into the irrigation and drainage system. Although the pollutants do not originate from agriculture, irrigation development has provided the means for dispersal into the aquatic environment. Conversely, improved irrigation and drainage control have reduced salinity and improved ecological conditions in other respects (for instance, reestablishing critical forests in Xingia). Environmental and water resource management components were added to projects that were primarily construction- and production-oriented, targeted to provinces where they would also address poverty.

5.5 Procurement weaknesses and devaluation, with inflation of construction costs and pressure on local funding, led to significant delays in completion. By not increasing funding for the project, the Bank avoided overexposure but reduced economic benefits. More important, Bank funding (made considerably higher in RMB by the devaluation) allowed some transfer of items to Bank-financed components, while not weakening central government pressures on the provinces to be financially responsible.²¹

6. Lessons Learned

6.1 Lessons learned were

- ***Cost-recovery works and improves project performance if is well-thought-out and creates beneficiary level incentive to achieve project benefits.*** The Bank negotiated with the separate provincial planning commissions (PPC) with minor involvement of the central ministries. The Ministry of Finance insists on repayment by the provinces (sometimes on terms less favorable than granted by the Bank to PRC) and will even intercept center-province grant flows to ensure repayment. This makes the Bank's loans bare some resemblance to a non-sovereign debt instrument. The Chinese system of on-lending places the burden of repayment at lower levels of government, creating a strong incentive for provinces and beneficiaries to implement sound projects. Equity financial participation by lower-level entities, such as county/township agencies, was high (up to 26% of total project cost being raised by county/township government.) This reinforces incentives for cost recovery – of one's own capital. While the fiscal and repayment burden are scarcely transparent in China, fiscal decentralization and genuine financial participation by the beneficiaries does appear to create a clear cascade of accountability and responsibility.
- ***The projects showed that it was possible to achieve the benefits of the integrated approach quite rapidly, even when resettlement was combined with complex engineering challenges.*** The resettlement component in Ningxia province was notable for the initial reluctance of people to leave the poor but familiar conditions in the arid areas and become irrigated farmers. After some faltering, the efforts of the province and the support of the Bank enabled a rapid adoption of irrigation and resettlement of 60,000 people, realizing considerable income benefits and enabling an environmental transformation of a previously barren area. Additional voluntary settlers were also accommodated.

²¹ For Northern Irrigation the Borrower commented: "Although the project has been affected by commodity inflation, the appropriate measures have been taken, and it has been managed strictly in accordance with the relevant procedures of the World Bank [illegible]. Actual, physical construction of the project, as set by the original estimate, has not slowed at all." (WB Translation)

- ***Increasing Bank influence on this client, through a gradual approach, allowed the Region to incorporate more elements of its policy agenda in subsequent projects***, which have moved away from pure construction to true water resources management goals. The Bank was cautious, leveraging large investments in physical irrigation capacity to introduce marginal reforms, rather than adopting a “big bang” approach. This philosophy, while not explicit in country documents, appeared to be part of an implicit strategy which also enabled the client to pilot new approaches on Bank projects
- ***“Counterpart funding should be committed and secured at all levels of government before implementation and assessment of feasibility should be based on “an accurate and realistic year-by-year project financing plan.”***²² This would have been a “risk-averse” council of perfection for these projects, which were implemented against a background of fiscal and political reform. The decision to lend and the concurrent assessment of creditworthiness demands judgment and some element of risk. The precipitating factor of devaluation can be viewed as a non-project systemic risk. The risks of delays in financing may have been underestimated at appraisal. But given the many positive achievements which are part of this financing system one could equally conclude that the risks are necessary. The Bank should take appropriate risks, especially when incentives of repayment for loans are so well set up and the Ministry of Finance is providing the guarantees (i.e. there is no Bank “exposure” in the technical banking sense.)

22. Project Appraisal Document for Guanzhong Irrigation Improvement Project, April 22, 1999

Annexes A: Basic Data

A. ACTUAL AND PLANNED FINANCING (\$ MILLION)

	C 1885		C1997		C2294		All	
	Actual	SAR	Actual	SAR	Actual	SAR		
Bank/IDA	101	103	111.3	106	128	125	340.3	334.0
Central Government	13.4	10.8	15.9	18	40.5	37.9	69.8	66.7
Regional Government/ Prefecture	46.8	66.2	121.9	46.5	42.3	36.6	211	149.3
County/ Township Self Raised.	51.5	54	32.5	61.7	15.1	12.7	99.1	128.4
Bank Credit	0	0	18.3	5.3	0	0	18.3	5.3
	212.7	234	299.9	237.5	225.9	212.2	738.5	683.7
As a %								
World	47%	44%	37%	45%	57%	59%	46%	49%
Bank/IDA								
Central Government	6%	5%	5%	8%	18%	18%	9%	10%
Regional Government/ Prefecture	22%	28%	41%	20%	19%	17%	29%	22%
County/ Township Self Raised.	24%	23%	11%	26%	7%	6%	13%	19%
Bank Credit	0%	0%	6%	2%	0%	0%	2%	1%

B. GENERAL PROJECT DATA

Operation	Credit/Loan no.	Amount (US\$million)	Closing date
Preceding Operations			
1. North China Plain Project	Cr. 1261-CHA		
2. Pi-Shi-Hang Chaohu Area Development	Cr.1601/Ln.2579-CHA		
3. Gansu Provincial Development	Cr.1793/Ln.2812-CHA		
Follow-on Operations			
1. Irrigated Agri. Intensification	Cr.2256/Ln.3337-CHA		12/31/98
2. Yangtze Basin Water Resources	Cr.2710/Ln.2874-CHA		12/31/01
3. Gansu Hexi Corridor	Cr.2870/Ln.4028-CHA		12/31/06

C. NORTHERN IRRIGATION PROJECT (CR. 1885-CHA)

Key Project Data (amounts in US\$million)

Item	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	234.0	212.7	90.9
Loan Amount	103.0	101.0	98.1
Counterpart Fund	131.0	111.7	85.3
Cancellation	0.0	0.0	0.0

Annex A**Cumulative Estimated and Actual Disbursements (in US\$million equivalent)**

	<i>FY89</i>	<i>FY90</i>	<i>FY91</i>	<i>FY92</i>	<i>FY93</i>	<i>FY94</i>	<i>FY95</i>	<i>FY96</i>	<i>FY97</i>	<i>FY98</i>
Appraisal estimate	5.2	24.0	50.3	76.1	95.4	101.8	103.0	103.0	103.0	103.0
Actual	24.3	34.6	47.3	59.6	75.3	88.3	96.3	99.5	100.5	101.0
Actual as % Appraisal	467.8	144.2	94.1	78.3	78.9	86.8	93.5	96.6	97.6	98.1

Last disbursement date: March 30, 1998

Project Dates

	<i>Original</i>	<i>Actual</i>
Identification (Initial Executive Project Summary)	NA	NA
Preparation	NA	09/16/86
Pre-appraisal	NA	06/11/87
Appraisal	06/87	09/21/87
Negotiations	03/88	01/25/88
Board presentation	05/88	03/22/88
Signing	07/88	08/11/88
Effectiveness	10/88	11/09/89
Mid-term review	NA	NA
Project completion	12/31/95	12/31/97
Closing date	06/30/96	04/30/98

Staff Inputs (US\$'000)

<i>Stage of Project Cycle</i>	<i>Planned</i>	<i>Actual</i>
Preparation to Appraisal	NA	63.8
Appraisal	NA	54.0
Negotiations through Board approval	NA	6.5
Supervision	NA	90.2
Completion	NA	11.0
Total	NA	225.5

Annex A

Mission Data

	Date (month/year)	No. of persons	Staff days in field	Specializations represented ^a	Performance rating ^b	Imple. Status Dev objec.	Types of problems
Identifications and Preparation	03/86 to 09/87	4	NA ^c	A, E, I,IE	-	-	-
Appraisal to Board approval	09/87 to 03/88	4	NA	A, E, I,IE	-	-	-
Supervision 1	04/89	1	12	I,E	2	1	MS, EGR, F
Supervision 2	10/90	3	14	A, E, IE	1	1	EGR, F
Supervision 3	10/91	1	14	IE	1	1	EGR, F
Supervision 4	09/92	1	12	IE	1	1	EGR, F
Supervision 5	10/93	1	5	IE	1	1	EGR, F
Supervision 6	04/94	2	10	IE	1	1	F
Supervision 7	06/95	23	10	IE, RS	HS	HS	EGR
Supervision 8	06/96	4	10	IE, ES		HS	EGE
Completion/ICR	03/97	2	7	IE,E	HS	HS	-

a. Key to specialisation: A = Agriculture, E = Economist, I = Institution specialist, IE= Irrigation Engineer; RS = Resettlement specialist, ES = Environment

b. Performance ratings: 1 = Problem-free or Minor Problems; 2 = Moderate Problems; 3 = Major Problems. HS = Highly Satisfactory, S = Satisfactory, US = Unsatisfactory.

c. Type of problems: M = Management; EGR = Engineering; F = Counterpart Funding; MS = Material Shortage

e. Mid-term review. f. Form 590 was not prepared. No field visits.

D. SHAANXI AGRICULTURE DEVELOPMENT PROJECT (CR. 1997-CN)

Key Project Cost Data (amounts in US\$ million)

Item	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	237.53	300.02	79.2
Loan Amount	88.45	111.32	125.9
Counterpart Fund	149.08	188.70	126.6
Cancellation	0.0	0.0	0.0

Cumulative Estimated and Actual Disbursements (in US\$ million equivalent)

	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98
Appraisal estimate	25.0	65.0	90.0	100.0	106.0				
Actual		4.31	19.83	38.09	68.08	85.79	104.25	111.0	111.32
Actual as % Appraisal		4.1	18.7	35.9	64.2	80.9	98.3	104.9	105.0

Last disbursement date: Sep. 22, 1997

Annex A

Project Dates

	<i>Original</i>	<i>Actual</i>
Identification (Initial Executive Project Summary)	10/87	10/87
Pre-appraisal	03/88	03/88
Appraisal	06/88	06/16/88
Negotiations	01/89	01/9/89
Board presentation	03/28/89	03/28/89
Signing	09/89	09/14/89
Effectiveness	12/89	12/13/89
Mid-term review	NA	NA
Project completion	12/31/93	12/31/99
Closing date	06/30/94	06/30/97/a)

a) Three one-year extensions were applied.

Staff Inputs (Weeks and US\$'000)

<i>Stage of Project Cycle</i>	<i>Planned</i>		<i>Actual</i>	
	<i>Weeks</i>	<i>\$'000</i>	<i>Weeks</i>	<i>\$'000</i>
Preparation to Appraisal	NA	NA	106.5	187.9
Appraisal	NA	NA	62.0	120.2
Negotiations through Board approval	NA	NA	7.3	15.9
Supervision	NA	NA	162.3	430.2
Completion	NA	NA	7.0	40.4
Total	NA	NA	345.1	794.6

Annex A

Mission Data

	Date (month/year)	No. of persons	Staff days in field	Specializations represented ^a	Performance rating ^b Imple. Status Dev objec.		Types of problems
Identifications	09/87	2	7	TM, FA			
Preparation	11/87	6	21	TM, AE, AS, APS, PS	-	-	-
Appraisal to	06/88	6	28	TM, AE, AS, APS, PS	-	-	-
Supervision 1	10/89	2	12	TM, LS	1	1	-
Supervision 2	04/90	3	15	TM, PS, PMS	3	1	-
Supervision 3	10/90	4	15	TM, LS, PS, AS	2	1	-
Supervision 4	11/91	4	12	TM, AE	2	1	-
Supervision 5	04/92	4	11	TM, IE, EO, PS	4	2	-
Supervision 6	10/92	6	24	TM, CE, IE, AS, PS	2	2	-
Supervision 7	04/93	4	10	TM, CE, IE, AS	2	2	-
Supervision 8	11/93	2	10	TM, CE	2	2	-
Supervision 9	04/94	3	9	TM, AS	1	2	-
Supervision 10	05/95	3	7	TM, CE, AS	S	S	-
Supervision 11	01/96	5	10	TM, APS, IE, CE, LS	S	S	-
Supervision 12	09/96	3	6	TM, APS, CE	U	U	-
Supervision 13	03/97	2	7	TM, CE	HU	U	-
Completion/ICR	11/97	5	11	TM, EO, IE, PS, FA	U	U	-

a. Key to specialisation: TM = Task Manager, AE = Agricultural Economist, APS = Agroprocessing Specialist, AS = Aquaculture Specialist, CE = Construction Engineer, EO = Economist, IE = Irrigation Engineer; RS = Resettlement specialist, ES = Environment, FA = Financial Analyst, LS = Livestock Specialist, PMS = Project Monitoring Specialist, PS = Procurement Specialist.

b. Performance ratings: 1 = Problem-free or Minor Problems; 2 = Moderate Problems; 3 = Major Problems. S = Satisfactory, US = Unsatisfactory, HU = Highly Unsatisfactory.

c. Type of problems: include implementation delays and shortage of counterpart funds.

E. TARIM BASIN PROJECT (CR. 2294-CN)

Key Project Cost Data (amounts in US\$ million)

Item	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	212.1	225.9	106.5
Loan Amount	125.0	128.0	102.4
Counterpart Fund	87.1	97.9	112.4
Cancellation	0.0	0.0	0.0

Cumulative Estimated and Actual Disbursements (in US\$ million equivalent)

	FY92	FY93	FY94	FY95	FY96	FY97	FY98
Appraisal estimate	10.0	32.5	69.5	93.5	117.5	125.0	
Actual	9.99	30.44	56.88	84.56	112.74	135.01	135.92
Actual as % Appraisal	99.9	93.7	81.8	90.4	95.9	108.0	108.7

Last disbursement date: Dec. 27, 1997

Annex A

Project Dates

<i>Stage of Project Cycle</i>	<i>Original</i>	<i>Actual</i>
Identification (Initial Executive Project Summary)	05/89	05/89
Pre-appraisal	09/88	09/89
Appraisal	04/90	04/90
Negotiations	06/90	09/90
Board presentation	05/91	05/91
Signing	08/91	08/91
Effectiveness	10/91	10/91
Mid-term review	01/92	01/92
Project completion	12/97	12/97
Closing date	04/98	02/98

Staff Inputs (Weeks and US\$'000)

<i>Stage of Project Cycle</i>	<i>Planned</i>		<i>Actual</i>	
	<i>Weeks</i>	<i>\$'000</i>	<i>Weeks</i>	<i>\$'000</i>
Preparation to Appraisal	NA	NA	90.0	233.1
Appraisal	NA	NA	50.0	123.8
Negotiations through Board approval	NA	NA	12.2	38.3
Supervision	31.5	55.2	84.7	238.1
Completion	7.0	19.7	11.4	51.8
Total	NA	NA	345.3	794.6

Mission Data

	<i>Date (month/year)</i>	<i>No. of persons</i>	<i>Staff days in field</i>	<i>Specializations represented^a</i>	<i>Performance rating^b</i>		<i>Types of problems</i>
					<i>Imple.</i>	<i>Status Dev objec.</i>	
Identifications	05/89	2	9	TM, EO			
Preparation	09/89	2	14	TM, PE	-	-	-
Pre-appraisal	04/90	11	24	TM, EO, FA, AG, LS, GS, IE, EN, RS, FS	-	-	-
Appraisal	09/90	8	19	TM, FA, AG, LS, DR, PE, GS, IE	-	-	-
Supervision 1	09/91	1	8	TM	NA	1	-
Supervision 2	05/92	3	8	TM, PS, DS	1	1	-
Supervision 3	09/92	7	8	TM, LS, PS, EN, WS, IE, GS	2	1	-
Supervision 4	10/93	4	9	TM, AG, IE, GS	1	1	-
Supervision 5 (Mid-term Review)	10/94	3	10	TM, IE, GS			-
Supervision 6	11/95	5	7	TM, EO, IE, GS, PS	HS	2	-
Supervision 7	12/96	4	8	TM, ID, IE, WR	HS	S	-
Supervision 8	06/97	5	10	TM, EO, AN, GS	HS	S	-
Supervision 9 (Completion/ICR)	11/97	7	11	TM, PS, FA, LS, PS, IE, GS	HS	S	-

a. Key to specialisation: TM = Task Manager, AG = Agricultural Specialist, AN = Anthropologist, ES = Environmentalist, EO = Economist, DR = Drainage Specialist; FA = Financial Analyst, GS = Groundwater Specialist, ID = Institutional Development, IE = Irrigation Engineer, LS = Livestock Specialist, PE = Power Engineer, PS = Procurement Specialist, RS = Resettlement Specialist.

b. Performance ratings: 1 = Problem-free or Minor Problems; 2 = Moderate Problems; 3 = Major Problems. HS = Highly Satisfactory, S = Satisfactory.

c. Type of problems: include implementation delays and shortage of counterpart funds.

BORROWER'S COMMENTS*June 15, 2000*

**To: Ridley Nelson, Acting Manager
Sector and Thematic Evaluations Group
Operations Evaluation Department**

Dear Mr. Nelson,

Re: Shaanxi Agricultural Development Project (Cr. 1997-CN)
Draft Performance Audit Report

Thank you for your letter dated May 25, 2000. Our comments are as following:

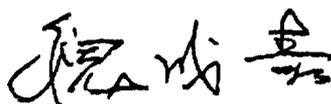
1. The project was start in 1990, from 1992 to 1994, the inflation was seriously in China, which caused the amount of counterpart fund increased 3 times than original plan. In order to solve the problems of short counterpart fund, Shaanxi Government had adopt many measures, include borrow 150 million yuan from State Development Bank. Although the counterpart fund still not been fully solves, Shaanxi is a poor province, the government had try its best for the project, so, we do not agree with the " main burden of blame for errors committed must rest on the Borrower's side and performance is judged Unsatisfactory" in the end of clause 4.2.

2. According to "Credit Agreement", the total loan amount is SDR78,800,000(about USD106 million).

3. In clause 2.6 to 2.9 "SPC" shall be "PPC" in some places.

4. in clause 2.6, "the SPC want the project to be prepared by a design institute and then put out to tender through LCB", in this sentence, the "SPC" shall be "WRB".

With best regard,



**Wei Chengshou
Standing Deputy Director
Shaanxi Agricultural Development Project
Management office**

BORROWER'S COMMENTS**A Few Opinions on the Rough Draft of the "Implementation Audit Report" of the Regional Evaluation Group, Operations Evaluation Department, World Bank**

World Bank office in China, please forward to Riddley Nelson, acting manager of the Regional Evaluation Group of the World Bank Operations Evaluation Department:

We fully comprehend and have conscientiously researched the Rough Draft of the "Implementation Audit Report" (abbreviated "Rough Draft") on the north China irrigation project (CR1886—CN) of the Regional Evaluation Group of the World Bank Operational Evaluation Department. We believe that the Rough Draft's evaluation of how the project is being implemented is quite accurate. It affirmed the project results and the benefits that the project has produced. We will now offer the following opinions for your reference.

1. "Rough Draft" 4.1: The outstanding implementation in Ningxia and the results of the Hetao irrigation: The project results should be classed as highly satisfactory. However, because the results cannot be verified, the project has been classed as satisfactory...." In our opinion, they still should be classed as highly satisfactory.

2. 1.5, line 3: "...In two sub-projects, irrigation is accomplished by raising water from the Yellow River through multi-stage pump stations." Ningxia and Inner Mongolia should be discussed separately. The Hetao project in Inner Mongolia consists of building a dam on the Yellow River and diverting free-flowing water for irrigation. Irrigation is not achieved by raising water through multi-stage pump stations.

3. 5.5: "....resulting in delayed completion of the project" and actual project implementation period. Although the project has been affected by commodity inflation, the appropriate measures have been taken, and it has been managed strictly in accordance with the relevant procedures of the World Bank [illegible]. Actual, physical construction of the project, as set by the original estimate, has not slowed at all.

Inner Mongolia Hetao Project Office, [illegible] Yue
June 20, 2000

ANNEX B

BORROWER'S COMMENTS

**XINJIANG WORLD BANK LOAN TARIM BASIN II
PROJECT MANAGEMENT OFFICE**

Mr. Ridley Nelson
Acting Manager
Sector and Thematic Evaluation Department
Operations Evaluation Department

June 21, 2000

Dear Mr. Ridley Nelson;

COMMENTS ON DRAFT PERFORMANCE AUDIT REPORT

We have received your Draft Performance Audit Report for Tarim Basin I Project and together with other two projects, and we have carefully studied the reports in particular the section related to Tarim Basin I Project. The following were the comments we made towards the Tarim Basin I Project.

We holding the opinion that there were several factors that has the most infection to the success of the project which were attaching importance from the senior leaders for the project, project management office set up, coordination from agencies related to the project, financial management, counterpart funding to the project, procurement of goods, repayment services of loan, training activities.

Support from the senior leaders to the project was one of the importance factor in project implementation in China and has major role in project implementation.

Project management setting up; A functioning and stable institutions to management the project considered to be the key in project success. As for the institutions for the project management that the working staffs in the office and directors for PMO should remain stable for at least project life time and it should not be under the situation of frequent change. Since the World Bank project management needs a lot of training program for the management staffs so to acquire the project management skill.

Coordination of agencies related to the project ; For such a project that have three components water conservancy, agriculture, and animal husbandry and the project to distributed in two prefectures, 9 counties. The coordination of the project was a importance issue since the project will both to follow the domestic procedures while to adopt the rules and guidelines from the Bank. Without good coordination of the project it would be difficult to proceed.

Counterpart fund; The timely and adequate availability of the counterpart funding to the project remains to be the difficult issue needs further solution. Since the project domestic counterpart funding to the project came from different sources such as the fund from central government, regional, prefecture, counties and farmers inputs with defined fund use objective planed to the project in annuity. The World Bank implementation plan to the project has the time difference with that of the counterpart funding disbursement to the project. It was always beyond the authorities of the project management entities.

Project finance management was another factor in good project implementation. Since the World Bank project finance management considered to be complicated and has the strict regulation in loan application, A through and detailed finance management manual or handbook for finance management, and account control, audit provisions definitely needed in good project implementation and providing guidelines in loan use.

ANNEX B

BORROWER'S COMMENTS

- 2 -

JUNE 21, 2000

Repayment service; The selection of the project items should focus on the overall project objectives, but also to considered the economic return factors for the project. Since without good benefits gained from the project then the repayment of loan would be in difficult situation.

Setting up of project advisory expert specialist group considered to be a good method to improve the project management. The specialist would better up come from the background related to the items of the project and provide advisor for the project management.

Procurement of goods by using the World Bank, ICB, NCB and other procurement procedures could greatly reduce the cost for such procurement items and activities, with better quality especially in the case of ICB procurement in material procurement like coal, cement etc.

Training and study tour on project management and other categories can be a good tools in the project management, and it can help to facilitate the project management.

Our rating for the World Bank performance, outcome from project, sustainability of project, institutional development:

- The World Bank performance in the project considered to be highly satisfactory since the project manager from the Bank Mr. Gunaratnam has good experience working in China and developing countries for irrigation project. To adopt the local situation into the project design, and giving great respect and importance to social aspects while to develop the project was crucial in project life time. Besides the project management experience from the world Bank considered to be a very good experience for counterpart staffs to learn so to facilitate other projects as well.
- The project sustainability could be well rated likely. Since the project has developed good basis for future development that the irrigation canals hydropower remains, agricultural and animal husbandry extension stations under the project proved to be good in its benefits.
- The institutional development considered to be substantial since the Tarim River Management Bureau has established under the project to better management the ecological management in the Tarim Basin, and it has laid good basis for Tarim Basin Water Resources Management Commission developed under the Tarim Basin II project.

The above is the simple comments we made to the project and staff appraisal report. We would appreciate the World Bank further support to the project activities in Xinjiang.

Sincerely

Mr. Kasim Tohri
Director



Xinjiang World Bank Loan Project Management Office

Copy to ; Mr. Daniel Gunaratnum (RMC in Beijing , 010 65541686)

Mr. Zhi Ying Feng (RMC 010 6554 1686)