



1. Project Data:		Date Posted : 08/14/2002	
PROJ ID: P003507		Appraisal	Actual
Project Name: Ertan Hydro li	Project Costs (US\$M)	2200	2601
Country: China	Loan/Credit (US\$M)	400	400
Sector(s): Board: EMT - Power (97%), Sub-national government administration (3%)	Cofinancing (US\$M)	0	150
L/C Number: L3933; LB106			
	Board Approval (FY)		95
Partners involved : Sanwa International Finance	Closing Date	12/31/2001	12/31/2001
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2. Project Objectives and Components

a. Objectives

The objectives according to the appraisal report were :

1. Alleviation of acute power shortages in Sichuan in a least-cost manner, through the completion of the Ertan Hydroelectric Project (Part I was also partially funded by the Bank.)
2. Further institutional development of Ertan Hydroelectric Development Corporation (EHDC) as an autonomous, financially sound and commercially oriented entity (an independent power producer or IPP.)
3. Promotion of competition through development of market-oriented commercial arrangements for the sale of power generated by the project.
4. Diversification of financing strategies for power development.
5. Transfer of modern technology for hydroelectric power plants in China.

b. Components

The appraisal/ actual project costs (excluding interest during construction) were \$2.2 and 2.6 billion respectively, comprising :

1. Preparatory Works (6.2% / 3.4%)
2. Land Acquisition and Settlement (9.7% / 11.3%)
3. Civil Works (60.5% / 64.3%)
4. Electromechanical equipment, power transformers, gates/ hoists (18.6% / 13.6%)
5. Engineering and Construction Management (4.2% / 7.1%)
6. Environmental Protection (.4% / .2%)
7. Reform plan, financial MIS and training (.5% / .3%)

c. Comments on Project Cost, Financing and Dates

The costs are for the entire Ertan Project for construction of a major dam in Sichuan Province, on the Yelang River, a major tributary of the Yangtze. The Ertan II loan was an extension of earlier one for \$ 380 million in 1991. Thus the total Bank loan for Ertan I and II is \$ 780 million. Physical and price contingencies were 8% of appraisal costs, all of which were used to meet the 18% \$ cost overrun. The increase was largely due to civil works which overran by 37%, land acquisition and resettlement by 49%, and engineering and construction management by 116%. There was a modest saving on equipment and items 6 and 7, the software components. The Bank provided a guarantee for a \$150 million loan from Sanwa International Finance of Japan. The debt-equity structure of the EHDC is being modified and will eventually include equity financing from central government (rebated VAT tax for 1998-2002), which will be donated in equal parts to the existing shareholders.

The provincially owned Sichuan State Development Bank was a major lender; the equity holders are Sichuan Electric Power Corporation (SEPC), the major offtaker (4%); Sichuan Investment Company or SIC (48%); and the central government owned State Development Investment Corporation or SDIC (48%.) If the position of the ultimate project owner, borrower and effective guarantor of the loan, Sichuan Province, is considered as a single entity, the debt-equity ratios derived cannot be compared to conventional benchmarks where there is a sharper distinction between equity and debt (the province owns some of the provincially owned commercial banks that have made loans, and would be expected to underwrite their deposit obligations.)

3. Achievement of Relevant Objectives:

1. Alleviation of power shortages was achieved and Chongqing now uses Ertan for 75% of its peak load. But this has not been achieved as cost-effectively as assumed at appraisal - the outcome was *satisfactory* as the province has already made substantial progress in abiding by the power purchase agreement (PPA) in 2001 and the EIRR is still satisfactory.
2. The EHDC became more autonomous and commercially oriented, but is not yet financially sound and hence the achievement is *moderately satisfactory*.
3. The project aimed to promote competition in the electricity industry but after the Asian Economic Crisis in 1997, the province did not keep the covenants on the PPA when the first capacity came online in 1998. While the province is well on the way to meeting the spirit of the original PPA, the future terms have not yet been finalized and the outcome is *moderately unsatisfactory*.
4. The project did succeed in diversifying the financing strategies for power development even though this has not yet included private risk capital. Outcome is *satisfactory*.
5. The project did transfer modern technology for power plants in China and the outcome is *highly* satisfactory.

The target EIRR was 16% at appraisal while two calculations are presented in the ICR: - (A) 22 fen/Kwh; or (B) that the tariff is sustained at the agreed 39.8 fen/Kwh. 14.7 TWh in generation is assumed for both scenarios. These two cases yield results of 11% and 16% which is moderately satisfactory (the target discount rate is 10-12%). The FIRR is between 6 and 9%, below the target of 12%, but close to the cost of domestic loans. Financial ratios are still in unhealthy territory, although the province would undoubtedly bail the EHDC out financially, and GOC plans to inject additional equity. The financial outcome is moderately unsatisfactory but the Sichuan Electric Power Company (SEPC) has already increased its purchases from .8 to 12.7 Twh and is promising the full design 14.7 Twh in 2002 (86% of capacity, sale of the balance being EHDC's responsibility.)

4. Significant Outcomes/Impacts:

1. Technically the project has been a great success and the EHDC has achieved sufficient financial and managerial capacity to be confident about future sustainability when the PPA is fully implemented.
2. Chinese institutes and manufacturers played the major role in design of one of the most sophisticated arch dams in the world and delivery of top-of-the-range equipment including 550 MW turbines and computer control systems. Concrete placement surpassed in quality all past civil works in China.
3. The reservoir provides 3.4 billion m3 of live storage for flood control. Navigation has improved and there has been a doubling in the yearly growth rate of local GDP to 7%, raising the incomes of 80,000 people.

5. Significant Shortcomings (including non-compliance with safeguard policies):

1. Failure to abide by the PPA has led to distorted dispatch and pricing policies, excess capacity and shortfalls in financial performance. "Two part tariff" and "avoided cost" principles were deferred. Sales by EHDC appear to have been thwarted by monopsony power abuses by SEPC and political interference. SEPC bought lower cost electricity from thermal producers (whose costs were low since they had practically no debt service burden.) The failure to implement the pricing policy short-changed the promotion of hydro power. EHDC's financial ratios are way below target (Debt Service Coverage .8 vs. 1.5, rate of return on revalued assets 3.9% v 15% and debt-equity ratio 98/2 vs. 70/30.)
2. The scope of resettlement (35,000 at appraisal but 46,000 in the Resettlement Action Plan) and contingencies were underestimated; some settlers were located inappropriately with respect to physical and economic environment. This will be corrected by a second stage resettlement of 3,000, mandated by the Ministry of Finance. The income of rural settlers has only reached 66.5% of that planned, although 4 years remain to reach the target.

6. Ratings:	ICR	OED Review	Reason for Disagreement /Comments
Outcome:	Satisfactory	Moderately Satisfactory	There were significant economic and financial losses due to the SEPC's mishandling of the effects of the Asian Economic Crisis, to the detriment of EHDC. OED rates a project as moderately satisfactory (a rating that does not exist under the ICR's 4-point rating scale) when it achieves most of its major relevant objectives but with significant shortcomings.
Institutional Dev.:	Substantial	Substantial	
Sustainability:	Likely	Likely	
Bank Performance:	Satisfactory	Satisfactory	
Borrower Perf.:	Satisfactory	Unsatisfactory	While central government policy was

		highly supportive and EHDC performed exceptionally well, Sichuan Province was the ultimate "Borrower" and loan guarantor. The province failed to make SEPC abide by the PPA and the GOC policies, both of which had been axioms of project design.
Quality of ICR :		Satisfactory

NOTE: ICR rating values flagged with '*' don't comply with OP/BP 13.55, but are listed for completeness.

7. Lessons of Broad Applicability:

The ICR presents three particularly useful lessons : -

1. World class construction calls for world-class contractors and advice . Procurement must follow rigorous ICB and joint ventures with insufficient technical and financial wherewithal should not be pre-qualified to bid.
2. The advice of an Advisory Group of international experts in different technical and managerial areas was key to achieving high effectiveness on schedule, cost and quality control in the light of serious contingencies .
3. Three institutional features of resettlement in China facilitate success and can be replicated elsewhere : (i) enlightened policies which see resettlement as a development opportunity; (ii) planning based on sound guidelines and open to a fair and participatory process; and (iii) funding of post-resettlement activities by a levy from project-generated incomes.

8. Assessment Recommended? Yes No

Why? The outcomes need to be independently verified, especially the unfinished resettlement business .

The project is also of strategic significance since the enormous hydropower resources of the Yelang River are still relatively underexploited, and Ertan may be an early manifestation of policy toward the sustainable development of western China (to which the Bank is now committed.)

9. Comments on Quality of ICR:

Clear and honest. However the presentation of the results of the of EIRR and FIRR estimates (Annex 3, pp 34-40) could have been better explained, and the absence of monitoring indicators, which should have been retrofitted for projects closing after 1999, is noted.